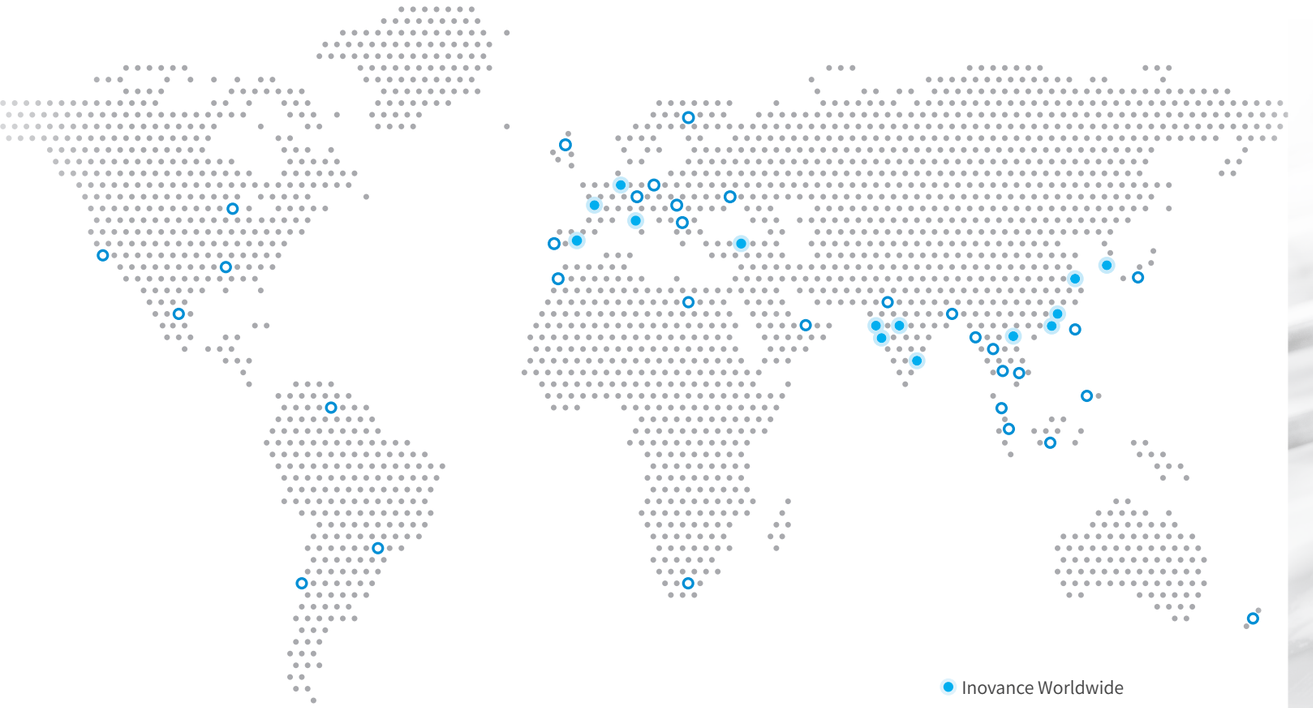
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- Inovance Worldwide
- Distribution & Service Partners

Advancing industrial technology, for a better world

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INOVANCE

AM300 & AM500 Series Controllers

High performance, compact EtherCAT-enabled CODESYS controller



Features & functions

- PLCopen compliant axis control
- EtherCAT real-time and multiprotocol
- IEC 61131-3 compliant CODESYS software
  - Built-in self-tuning PID
- Compact footprint: 53*100*80mm
- Quad-core processor, instruction processing speed as low as 9.9ns
  - Supports up to 16*GL20 local expansion I/O modules
  - 2 expansion slots, with analog, digital, CAN, RS485, TF card andRTC optional

OPC UA · EtherNet/IP · EtherCAT · CANopen · CODESYS · CE · cULus LISTED · UKCA · KC

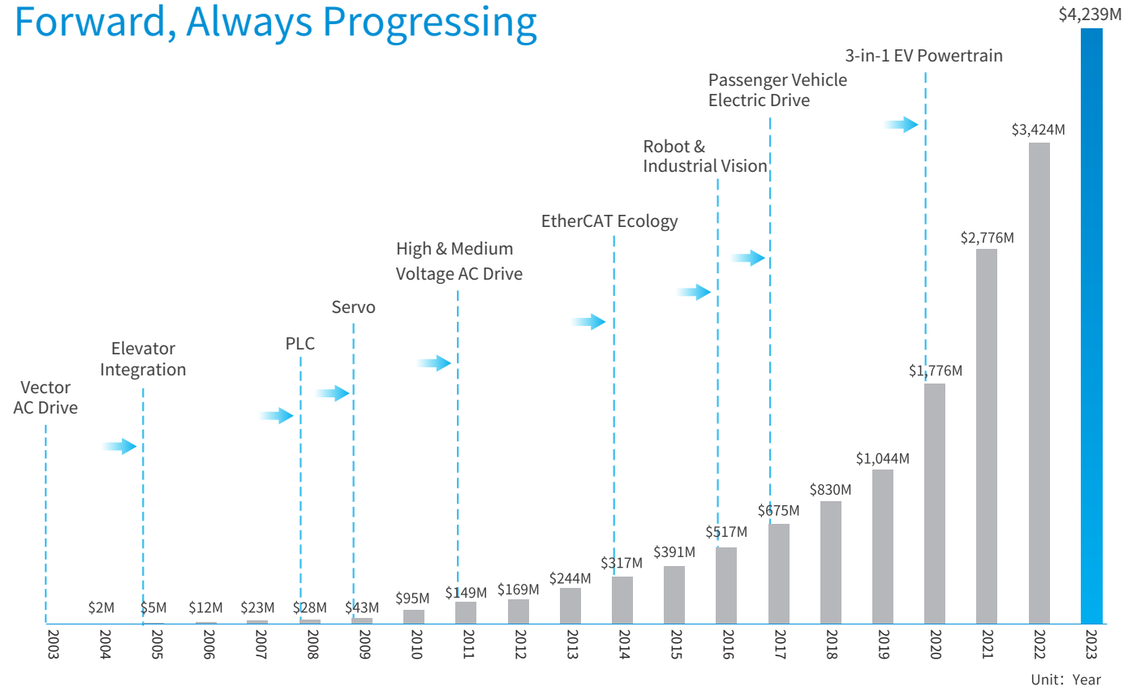


About Inovance

The Inovance Group, founded in 2003, is a rising star in the global industrial automation business and has revenues of $4.2 in 2023. Inovance is headquartered in Shenzhen, China, and has built a global operation with offices and facilities in Germany, France, Italy, Spain, Turkey, India, and South Korea. Additionally, the company has a strong network of distribution partners around the world.

The company 's flexible production techniques and expert understanding of all industry sectors - from plastics to printing to packaging to iron & steel production - have allowed it to establish globally leading industry-specific business units. Over the years, Inovance has built an engineering team with specialist expertise in industrial automation. This knowledge allows it to form strong partnerships with OEMs and end users, providing ongoing advice about how to get the most out of their automation solutions today, and how to stay prepared for the market and technology changes that are coming in future.

Forward, Always Progressing



2003
founded

IPO:2010
Shenzhen, China

20,000
employees

Global
network of offices and distributors

$4.2+bn
revenues in 2023

Servo System
4,500,000+
sets delivered in 2023

AC Drive
2,20,000+
sets delivered in 2023

Industrial Robot
22,000+
sets delivered in 2023

Controller
3,400,000+
sets delivered in 2023

Global Factories

Inovance has built digital factories around the world, including one in India that has been in operation for a decade. In 2022,we started to build the Hungary factory for localized manufacturing in Europe.















Founded in: Apr. 1992
Area covered: 3,800 m²



Founded in: Mar. 1998
Area covered: 35,753 m²



Founded in: Dec. 2003
Area covered: 7,500 m²



Put into operation in: May 2019
Area covered: 66,000 m²



Founded in: June 2002
Area covered: 10,000 m²



Founded in: Dec. 2003
Area covered: 18,000 m²

Factory in India

Founded in: 2012



Factory in Hungary

Founded in: 2022

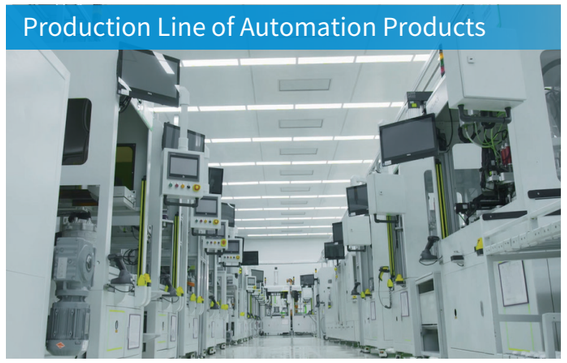


Subsidiary：SBC，Korea

Acquisition: 2023



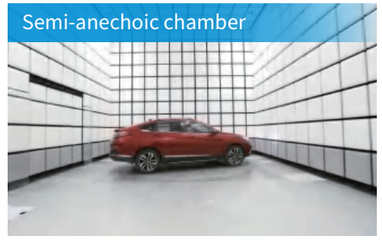




Worldwide R&D network



Inovance invests heavily in R&D, enabling the company to continuously releease a steady stream of new and innovative products. To ensure that all products meet all key global standards wherever possilble, Inovance's R&D teams in Europe, India, and China, all work together seamlessly and virtually on engineering projects. Inovance calls this co-development, and the practice ensures that the best technology knowledge and solutions can be gathered from all around the business; and that they are always implemented and adapted in a way that meets the needs of local markets. The company's commitment to innovation is demonstrated through its headcount: over 20% of Inovance's entire global workforce is in R&D.

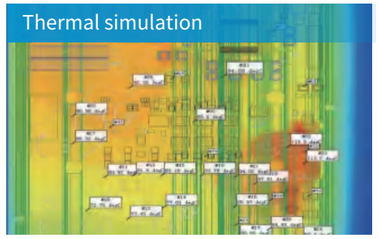












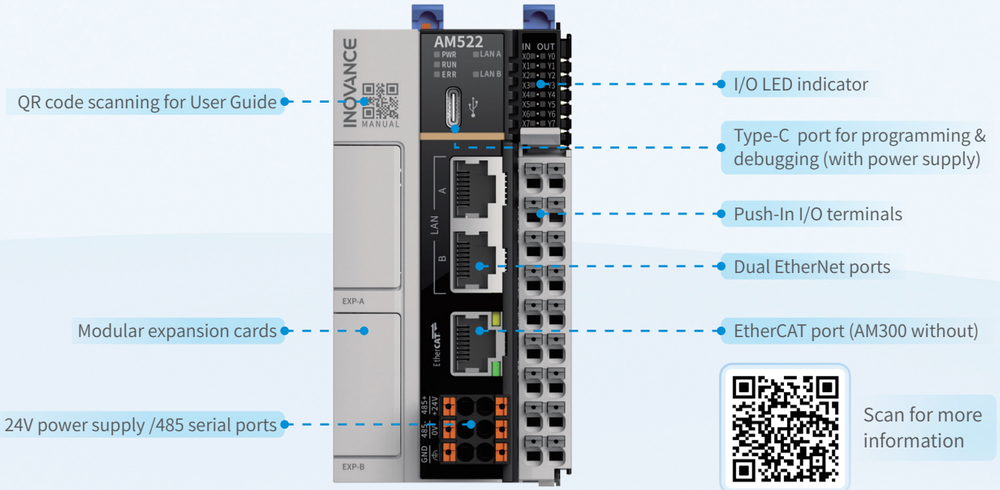
6 R&D Centers
Shenzhen, Suzhou, Xi'an,Nanjing, Milan (Italy), Stuttgart (Germany)

3297 Patents and software copyrights
Invention479 / Utility model 1850 / Industrial design 523 / Software copyright 445

5400+ R&D Employees
Account for 23% of total employees

USD **320+** Million
Account for 8.6% of revenue 2023

AM320/AM522 Controllers Overview



AM320



AM521/AM522



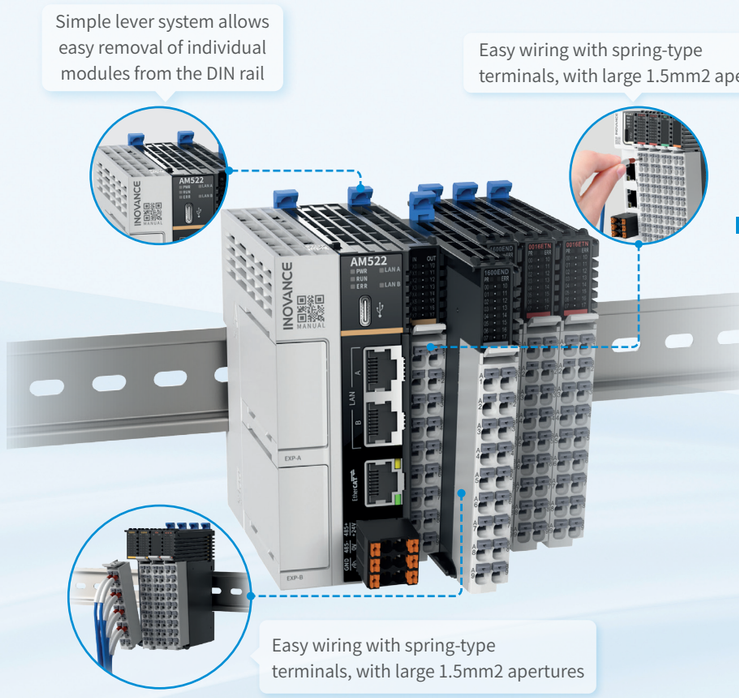
CPU with dual Ethernet port

- Quad-core processor
- Dual network port with independent IP Address
- 2 expansion slots
- 30 CANopen axes for PTP movements(optional card required)
- 4 pulse axes
- 4 encoder inputs (8×high speed inputs,up to 200 kHz)
- Supports up to 16 GL20 local expansion modules

Motion control CPU

- Quad-core processor
- EtherCAT real-time network
- 2 expansion slots
- 8 (AM521) or 16 (AM522) EtherCAT synchronized axes
- Up to 127 EtherCAT slaves
- 30 CANopen axes for PTP movements (optional card required)
- 4 pulse axes
- Axis group for linear and circular interpolation
- 4 encoder inputs (8×high speed inputs,up to 200 kHz)
- Supports up to 16 GL20 local expansion modules
- I/O can be expanded by using EtherCAT bus coupler GL20-RTU-ECT

Compact design and tool-free wiring



Codesys based platform

- InoProShop PC-tool
- IEC 61131-3 compliant CODESYS sofware

CODESYS InoProShop

- PLCopen compliant

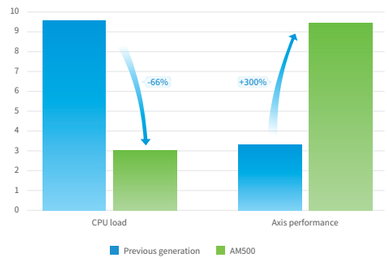
PLCopen motion control

- Programming languages LD, ST, SFC
- Intuitive axis and local/remote I/O configuration
- Easy to integrate INOVANCE servos and AC drives
- CAM table can be easily configured by using the graphical editor
- Monitor, trace and gather any program variable with the virtual oscilloscope function

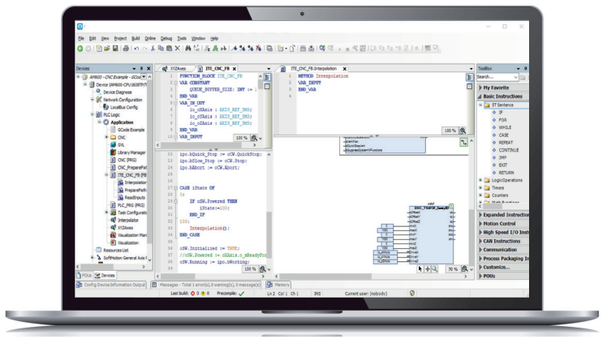
Higher performance than previous generation



SINGLE CORE **QUAD** CORE



- 1ms EtherCAT cycle with 4 synchronized axes(AM521/AM522)
- Supports up to 127 EtherCAT slaves(AM521/AM522)
- Support up to 16 EtherNet/IP slaves
- Supports up to 63 Modbus TCP slaves
- Supports up to 16 OPC UA clients
- Supports up to 31 Modbus RTU nodes
- Supports up to 63 CANopen slaves

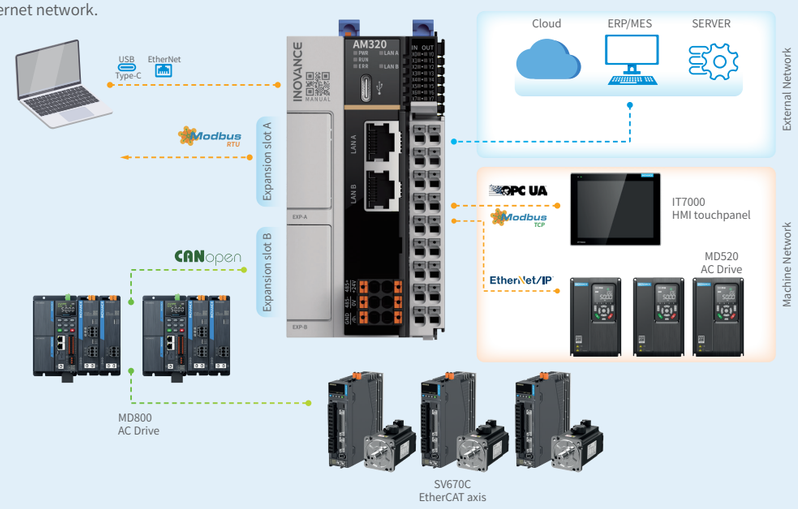


Scalable system architecture
Multiple configurations

The AM320 and AM521/AM522 controllers can cover anything from the simplest PLC application to the most complex motion control application using EtherCAT servo drives. In addition, they support a wide variety of industrial protocols such as Modbus TCP, Ethernet/IP, CANopen, OPC-UA.

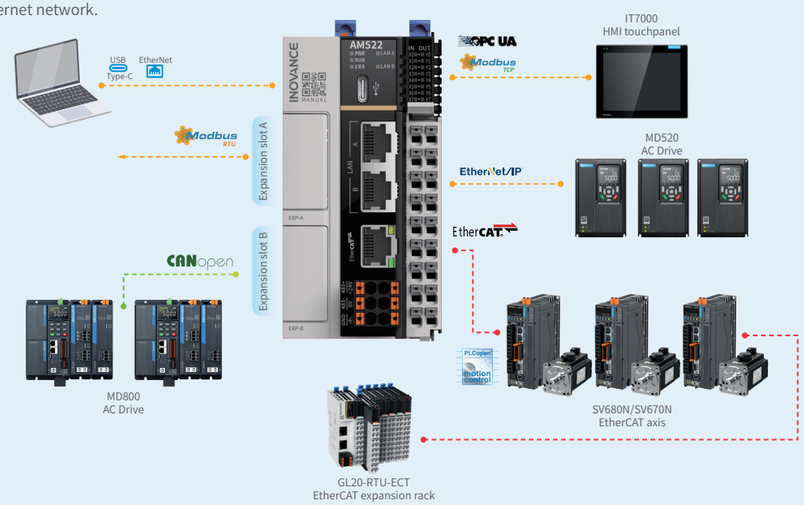
AM320

CPU with two independent IP addresses network ports.
It supports two Modbus TCP or Ethernet/IP master-slave communication.
Machine network isolated from external network.
Redundant Ethernet network.



AM521/AM522

CPU with two independent IP addresses network ports.
It supports two Modbus TCP or Ethernet/IP master-slave communication.
Machine network isolated from external network.
Redundant Ethernet network.



Specifications

Basic specifications of AM300/500 series controller

Item	AM320-0808TP-INT	AM320-0808TN-INT	AM521-0808TP-INT	AM522-0808TP-INT	AM521-0808TN-INT	AM522-0808TN-INT
Certification	CE	CE cULus UKCA KC	CE	CE	CE cULus UKCA KC	CE cULus UKCA KC
Motion Axis	4 pulse axes		8 EtherCAT axes + 4 pulse axes	16 EtherCAT axes + 4 pulse axes	8 EtherCAT axes + 4 pulse axes	16 EtherCAT axes + 4 pulse axes
Expansion modules (GL20)	The main body can be expanded with the full range of GL20 modules (16)					
Expansion slots (GE20)	Supports 2 slots for GE20 expansion cards (serial port/CAN, digital, analog, TF card, RTC clock)					
Ethernet	2x Ethernet ports (2 independent IP Addresses)		2x Ethernet ports (built-in switch)			
EtherCAT	EtherCAT not supported		Supports up to 127 EtherCAT slaves 1ms cycle 4 axes synchronization			
Serial communication	1×RS485 Supports 2×RS232/485 expansion cards Supports free protocol, 31 Modbus RTU/ASCII slaves (recommended)					
CAN communication	1 (requires expansion card), supports CANlink/CANopen master/slave (up to 30 CANopen or 62 CANlink slaves), freeCAN					
Program storage	10M program capacity					
Data storage	20M data capacity (512kB Non-volatile)					
Instruction execution time	0.143μs bit manipulation instruction 0.416μs word processing instruction					
Dimensions (W×H×D: mm)	53 mm×100 mm×80 mm					
Other interfaces	USB type-C (host power supply, program upload and download, debugging, firmware upgrade)					
CAM and interpolation	Support CAM and interpolation motion					
Encoder axis	4 channel encoder axis (8 x high speed inputs, up to 200 kHz)					
Built in I/Os	8 inputs (selectable sink/source) 8 outputs (source type)	8 inputs (selectable sink/source) 8 outputs (sink type)	8 inputs (selectable sink/source) 8 outputs (source type)		8 inputs (selectable sink/source) 8 outputs (sink type)	
Programming languages	IEC 61131-3 standard: Structured Text (ST), Ladder Diagram (LD), Sequential Function Chart (SFC), Continuous Function Chart (CFC)					
Power supply	DC 24V±10%, 1A short circuit and reverse polarity protection					

Note: In case of more than 16 EtherCAT synchronized axes please contact with your local Inovance representative.

GE20 Series Expansion Card

The GE20 series expansion cards include nine types, covering digital I/O and analog I/O and their combinations, as well as serial communication, clock expansion, and TF card expansion. These cards can precisely suit your needs while saving space. They are compatible with the Easy series compact PLCs, which can support up to two expansion cards.

Product Model		Description	Slot	Certification
GE20-4DO-TN-INT		Supports 4-channel SINK transistor output	A/B	CE UKCA
GE20-4DI-INT		Supports 4-channel digital input	A/B	CE UKCA
GE20-2AD1DA-V-INT		Supports 2-channel analog current/voltage input and 1-channel analog voltage output	A/B	CE UKCA
GE20-2AD1DA-I-INT		Supports 2-channel analog current/voltage input and 1-channel analog current output	A/B	CE UKCA
GE20-232/485-RTC-INT		Supports RTC clock and one RS485 or RS232 channel	B	CE UKCA
GE20-232/485-INT		Supports one RS485 or RS232 channel	A/B	CE UKCA
GE20-RTC-INT		Supports RTC clock	B	CE UKCA
GE20-TF-INT		Supports user program upgrade and firmware upgrade	B	CE UKCA
GE20-CAN-485-INT		Supports CAN and RS485 communication	A	CE UKCA
GE20-TF-RTC-INT		Support TF expansion integrated RTC clock	B	CE UKCA

Communication expansion cards

Item	GE20-232/485-RTC-INT	GE20-232/485-INT	GE20-CAN-485-INT
Apperance			
Description	Supports RTC clock and one RS485 or RS232 channel	Supports one RS485 or RS232 channel	Supports CAN and RS485 communication
Slot	B	A/B	A
IP rating	IP20	IP20	IP20
Ambient temperature	–20°C to +55°C	–20°C to +55°C	–20°C to +55°C
RS485/RS232	1	1	1
Termination resistor	Supported; set through DIP switch	Supported; set through DIP switch	No termination resistor for RS485 Built-in termination resistor for CAN
Communication capability	Up to 31 slaves in RS485, with a distance of less than 3 m between adjacent slaves	Up to 31 slaves in RS485, with a distance of less than 3 m between adjacent slaves	Up to 31 slaves in RS485, with a distance of less than 3 m between adjacent slaves Up to 63 slaves in CAN
Baud rate of RS485/RS232	9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps	9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps	9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps
Baud rate of CAN	/	/	1000 kbps: distance < 20 m 500 kbps: distance < 80 m 250 kbps: distance < 150 m 125 kbps: distance < 300 m 100 kbps: distance < 500 m 50 kbps: distance < 1000 m
Clock accuracy	120 sec/month	/	/
Clock format	YYYY/MM/DD/HH/MM/SS	/	/
Built-in battery specifications	CR2302, 3-year life cycle, removable	/	/

Digital expansion cards

Item	GE20-4DO-TN-INT	Item	GE20-4DI-INT
Apperance		Apperance	
Description	Supports 4-channel SINK transistor output	Description	Supports 4-channel digital input
Slot	A/B	Slot	A/B
IP rating	IP20	IP rating	IP20
Ambient temperature	–20°C to +55°C	Ambient temperature	–20°C to +55°C
Output type	Digital transistor output	Input type	Digital input
Output mode	SINK	Input mode	SINK/SOURCE
Channels	4	Channels	4
Output voltage class (resistive load)	24V DC (20.4V DC to 26.4V DC)	Input voltage class	24V DC±10% (21.6V DC to 26.4V DC)
Output voltage class (inductive load)	0.5 A/point; 1 A/common terminal	Input current at ON	> 3.5 mA
Output voltage class (lamp load)	6 W/24V DC (total)	Input current at OFF	< 1.5 mA
Hardware response time (ON/OFF)	1 W/24V DC (total)	Input response time	Approx. 15 ms (hardware RC filter time)
Leakage current at OFF	< 10 μA	ON voltage	⩾ 15V DC
Switching frequency	100 Hz for resistive load; 0.5 Hz for inductive load; 10 Hz for lamp load	OFF voltage	⩽ 5V DC
Isolation	Photocoupler isolation	Software filter time	Not supported
Protection	Surge suppression	Isolation	Photocoupler isolation

Digital expansion cards

Item	GE20-RTC-INT	GE20-TF-INT	GE20-TF-RTC-INT
Apperance			
Description	Supports RTC clock	Supports user program upgrade and firmware upgrade	Supports user program upgrade and firmware upgrade
Slot	B	B	B
IP rating	IP20	IP20	IP20
Ambient temperature	–20°C to +55°C	–20°C to +55°C	–20°C to +55°C
Communication interface	I^2C	SDIO	I^2C (for RTC) /SDIO (for TF)
Clock accuracy	120 sec/month	-	120 sec/month
Clock format	YYYY/MM/DD/HH/MM/SS	-	YYYY/MM/DD/HH/MM/SS
Built-in battery specifications	CR2302, 5-year life cycle, removable	-	3-year life cycle, removable
SD card capacity	-	Up to 32 GB	Up to 32 GB
SD card type	-	TransFlash (Micro SD)	TransFlash (Micro SD)

Analog Expansion Cards

Item	GE20-2AD1DA-V-INT	GE20-2AD1DA-I-INT
Apperance		
Description	Supports 2-channel analog current/voltage input and 1-channel analog voltage output	Supports 2-channel analog current/voltage input and 1-channel analog current output
Slot	A/B	A/B
IP rating	IP20	IP20
Ambient temperature	–20°C to +55°C	–20°C to +55°C
Input type	Analog input	Analog input
Input mode	Current/Voltage	Current/Voltage
Input channels	2	2
Resolution	12-bit	12-bit
Conversion time	6 ms/channel	6 ms/channel
Input range	0 V to 10 V; 0 mA to 20 mA	0 V to 10 V; 0 mA to 20 mA
Current input impedance	250 Ω	250 Ω
Input accuracy (25°C)	Voltage: ±1%; current: ±1% (full range)	Voltage: ±1%; current: ±1% (full range)
Input accuracy (full temperature range)	Voltage: ±3%; current: ±3% (full range)	Voltage: ±3%; current: ±3% (full range)
Digital input	0 to 20000	0 to 20000
Output type	Analog output	Analog output
Output mode	Voltage	Current
Output channels	1	1
Resolution	12-bit	12-bit
Conversion time	1 ms/channel	1 ms/channel
Voltage output range	0 V to 10 V	0 mA to 20 mA
Voltage output load	> 2 kΩ	0 Ω to 500 Ω
Voltage output accuracy (25°C)	±1% (full range)	±1% (full range)
Voltage output accuracy (full temperature range)	±5% (full range)	±5% (full range)
Digital output	0 to 20000	0 to 20000

GL20 Series I/O Modules

The GL20 series I/O modules, introduced by Inovance, represent the next generation of modules designed for common bus networks. With an ultra-slim profile of as thin as 12 mm, they achieve as fast response as in microseconds, along with a flexible I/O system and a stable structural design.

The GL20 series I/O modules are designed and continuously improved with the needs of various industries in mind. They have many variants and offer abundant input and output channels, providing extensive customization options for costumers.

More than "slim"



Flexible System

Applicable to either bus coupler or CPU.

Compact Size

Ultra-slim I/O module as thin as 12mm, for fast installation and replacement.

Stable & Durable

D-BUS connectors, outperforming traditional surface-mounted connectors by enhanced stability and ten-year lifespan that minimizes downtime



Wiring diagram



I/O LED indicator

Label for each connection terminal

Digital outputs module

Analog outputs module

Digital inputs module

Analog inputs module

Communication module

Others

Please note: the colour codes specify the module type

Next-generation GL-LINK local bus, boosting speed to 100 Mbps

2/3

Thickness reduced to 12 mm, 2/3 cabinet space saved

Sur-face-mounted design

D-BUS design

D-BUS design, clamped on both sides, more stable than surface-mounted designs

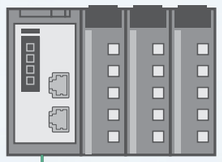
AC700



EtherCAT

GL20-RTU-ECT-INT

Profinet



PROFINET

GL20-RTU-PN-INT

Ethernet/IP



EtherNet/IP

GL20-RTU-EIP-INT

GL20 Series I/O Module Overview

Type	Model	Description	Terminal type	Certification
Bus Coupler	GL20-RTU-ECT32-INT	EtherCAT bus coupler module, supports up to 32 expansion modules.	Push-in	CE, UL, UKCA, KC
	GL20-RTU-PN-INT	PROFINET bus coupler module, supports up to 32 expansion modules	Push-in	CE, UL, UKCA, KC
	GL20-RTU-EIP-INT	EtherNET/IP bus coupler module, supports up to 16 expansion modules	Push-in	CE
Digital Input	GL20-0800END-INT	8 channel digital input module	Push-in	CE, UL, UKCA
	GL20-1600END-INT	16 channel digital input module (NPN/PNP)	Push-in	CE, UL, UKCA, KC
	GL20-3200END-INT	32 channel digital input module	Push-in	CE, KC
	GL20-3200END-M-INT	32 channel digital input module (operated with the cable: XA3210A-40-L0.5M-01, T024-K)	Ejector header	CE, KC
Digital Output	GL20-0004ETP-2A-INT	4 channel digital output module (PNP)	Push-in	CE
	GL20-0008ETN-INT	8 channel digital output module (NPN)	Push-in	CE, UL, UKCA
	GL20-0008ETP-INT	8 channel digital output module (PNP)	Push-in	CE, UL, UKCA
	GL20-0016ETN-INT	16 channel digital output module (NPN)	Push-in	CE, UL, UKCA, KC
	GL20-0016ETP-INT	16 channel digital output module (PNP)	Push-in	CE, UL, UKCA, KC
	GL20-0032ETN-INT	32 channel digital output module (NPN)	Push-in	CE, KC
	GL20-0032ETN-M-INT	32 channel digital output module (NPN) (operated with the cable: XA3210A-40-L0.5M-01, T024-K)	Ejector header	CE, KC
	GL20-0008ER-INT	8 channel digital output module	Push-in	CE
Relay Output	GL20-0004ER-INT	4 channel relay output module (channel separation)	Push-in	CE, UL, UKCA, KC
Digial In/Out	GL20-0404ETP-5V-INT	4 channel DI/DO module(PNP)	Push-in	CE
	GL20-0808ETN-INT	8 channel DI/DO module(NPN)	Push-in	CE, UL, UKCA, KC
	GL20-3232ETN-M-INT	32 channel DI/DO module(NPN)(operated with the cable: XA3210A-40-L0.5M-01, T024-K)	Ejector header	CE, KC
Analog Input	GL20-4AD-INT	4 channel analog input module (Resolution 16 bits, sampling time 250 μs)	Push-in	CE, UL, UKCA, KC
	GL20-8ADV-INT	8 channel analog input module-voltage type	Push-in	CE
	GL20-8ADI-INT	8 channel analog input module-current type	Push-in	CE
Analog Output	GL20-4DA-INT	4 channel analog output module (Resolution 16 bits, sampling time 250 μs)	Push-in	CE, UL, UKCA, KC
	GL20-8DAI-INT	8 channel analog output module-voltage type	Push-in	CE
	GL20-8DAV-INT	8 channel analog output module-current type	Push-in	CE
Temperature Detection	GL20-4PT-INT	4 channel thermal resistance inputs temperature detection module (Pt 100, Pt 500, Pt 1000, Cu 100, KTY 84, NTC 5K, NTC 10K)	Push-in	CE, UL, UKCA, KC
	GL20-4TC-INT	4 channel thermocouple inputs temperature detection module (Thermocouple type: B,E,N,J,K,R,S,T)	Push-in	CE, UL, UKCA, KC
Power Supply Expansion	GL20-PS2-INT	Extra power supply module. The rated current of the internal bus of the coupler is 2A. If a higher current is required,a combination of the coupler and the power supply unit GL20-PS2 should be used	Push-in	CE, UL, UKCA, KC
Functional I/O	GL20-2SSI-INT	2 channel encoder input module (SSI protocol)	Push-in	CE
	GL20-2HC-INT	2 channel high-speed counting module	Push-in	CE
Communication Expansion	GL20-2S485-INT	2 channel RS485 communication expansion module (Support Inovance PLC)	DB9	CE, UL, KC
	GL20-2S485-MDB-INT	2 channel RS485 communication expansion module (Support third-party PLC)	DB9	CE, UL
	GL20-2SCOM-INT	2 channel RS232/RS485/RS422 communication expansion module (Support Inovance PLC)	Push-in	CE
	GL20-2SCOM-MDB-INT	2 channel RS232/RS485/RS422 communication expansion module (Support third-party PLC)	Push-in	CE
	GL20-1DNM-INT	1 channel DeviceNet master station communication module	Push-in	CE
Options	XA3210A-40-L0.5M-01	40 Pin-I/O extension cable - 0.5m length (Required for GL20-XXXX-M)	-	CE
	XA3210A-40-L2M-01	40 Pin-I/O extension cable - 2m length (Required for GL20-XXXX-M)	-	CE
	T024-K	32 point screw terminal block (Required for GL20-XXXX-M)	-	CE