INOVANCE

CONTROLLERS

INOVANCE

EASY Series

Compact PLC

Expandable CAN bus, RS485, RS232, RTC, digital terminal, and analog terminal
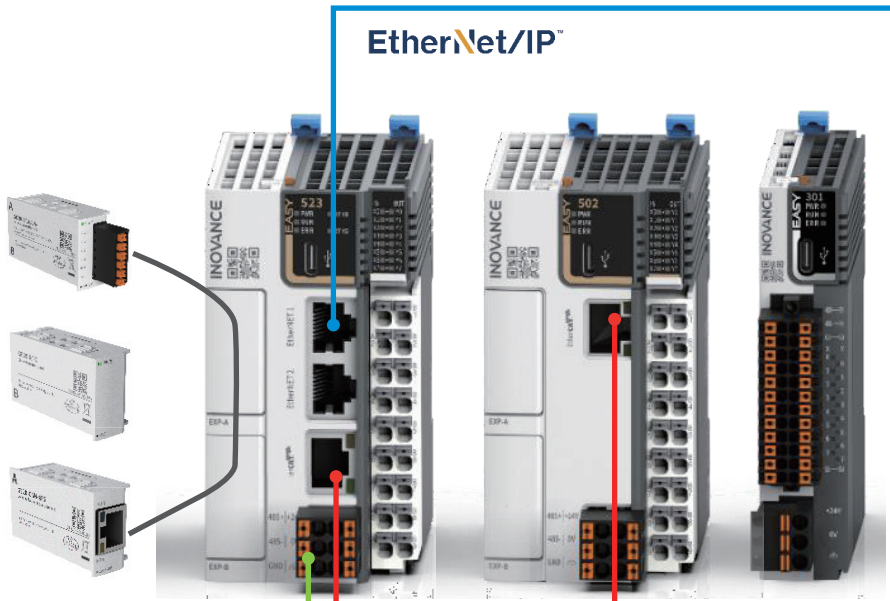
Expandable communication, Expandable digital/analog terminals, RTC

Program download and monitoring; EtherNet/IP, Modbus TCP, and Socket command

CANopen
Modbus

EtherNet/IP

Up to 72 EtherCAT slaves, including 32 servo axes

EtherCAT

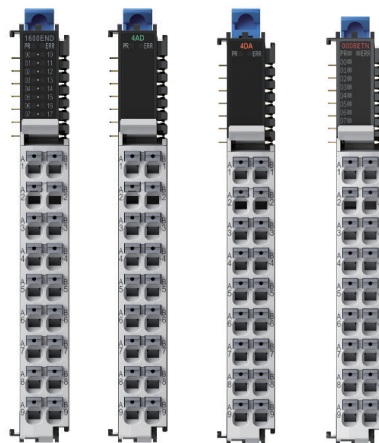| SV670 | SV680 | STD60 | SCARA | MD800 | GL20 series | GS20 series |

AutoShop

TCP

Supports following devices through routing: information collection and management system, PC, HMI, robot, PLC, and other Ethernet devices

EASY module: Five high-speed pulse outputs of 200 kHz,four for Easy301

Controls 5/4 servo or step motors

Access of up to 16 local modules, eight for Easy301

RS485, free protocol, MODBUS RTU, master/slave mode

Access of the slave through serial ports, and access of the HMI, instrument, apparatus, and sensor

Model	Easy301	Easy302	Easy320	
Product appearance				
General specifications				
Program data capacity	128 k-step user program; 1 MB user-defined variables, in which 128 KB variables, after No. 1000, are retentive at a power failure and 150 KB variables are soft elements			
Ethernet	/	Supports EtherNet/IP,available for models with the firmware version of 5.66.0.0 or later and with the AutoShop version of 4.8.0.0 or later, Modbus TCP, Socket, program upload and download, and firmware upgrade		
Number of axes (pulse + bus)	4	5		
Serial communication	Supports one RS485 channel and one RS232 channel.	Supports up to four channels,one RS485 channel and one RS232 channel supported by the product and two channels supported by the expansion card.	Supports up to three channels,one supported by the product and two supported by the expansion card.	
CAN communication	/	With the expansion card, one master and up to 63 slaves,available for models with the firmware version of 5.65.2.0 or later and with the AutoShop version of 4.6.5.0 or later,are supported.		
EtherCAT communication	Not supported			
High-speed input	Eight-channel with the frequency of 200 kHz			
High-speed output	4-axis with the frequency of 200 kHz; PWM pulse width modulation supported	5-axis with the frequency of 200 kHz; PWM pulse width modulation supported		
Expansion module	Supports up to eight local expansion modules.	Supports up to 16 local expansion modules.		
Expansion card	/	Supports up to two expansion cards.		
Program language	LD, SFC, FB/FC function (LD), and ST,available for models with the firmware version of 5.67.0.0 or later and AutoShop version of 4.8.1.0 or later.			
Type-C	Supports user program upload and download and firmware upgrade.	Supports user program upload and download and firmware upgrade through the type-C port ,or GE20-TF expansion card.		
Instruction speed	20 k-step user program executed in 2 m			
Other descriptions	Cam, gear, and interpolation not supported	Cam, gear, and interpolation supported		
Power supply specifications				
Input power supply rated voltage of the terminal	24 VDC±10%,21.6 VDC to 26.4 VDC.			
Input power supply rated current of the terminal	1 A , maximum value at 24 V voltage.			
24 V input power supply protection	Supports protection against short circuit and reverse wiring			
Input specifications				
Input type and mode	Digital input, sink/source mode			
Number of input channels	8			
Voltage upon power-on	≥ 15VDC			
Voltage upon power-off	≤ 5 VDC			
Software filter time	Low speed: 2 ms to 1000 ms High speed: 2 us to 1000 us			
Output specifications				
Output type	Transistor NPN output			
Number of output channels	8			

	EASY502	Easy523
General specifications		
	200 k-step user program; 1 MB user-defined variables, in which 128 KB variables,after No. 1000, are retentive at a power failure and 150 KB variables are soft elements	200 k-step user program; 2 MB user-defined variables, in which 128 KB variables,after No. 1000, are retentive at a power failure and 150 KB variables are soft elements
	/	Supports EtherNet/IP,available for models with the firmware version of 5.66.0.0 or later and with the AutoShop version of 4.8.0.0 or later, Modbus TCP, Socket, program upload and download, and firmware upgrade.
	16	32
	Supports up to three channels ,one supported by the product and two supported by the expansion card.	
	With the expansion card, one master and up to 63 slaves, available for models with the firmware version of 5.65.2.0 or later and with the AutoShop version of 4.6.5.0 or later, are supported.	With the expansion card, one master and up to 63 slaves are supported. This is available for models with the firmware version of 5.66.0.0 or later and with the AutoShop version of 4.6.4.0 or later.
	Supports one channel and up to 72 slaves	
	Eight-channel with the frequency of 200 kHz	
	5-axis with the frequency of 200 kHz; PWM pulse width modulation supported	
	Supports up to 16 local expansion modules.	
	Supports up to two expansion cards.	
	LD, SFC, FB/FC function (LD), and ST , available for models with the firmware version of 5.67.0.0 or later and AutoShop version of 4.8.1.0 or later.	
	Supports user program upload and download and firmware upgrade through the type-C port ,or GE20-TF expansion card.	
	20 k-step user program executed in 2 m	20 k-step user program executed in 1.6ms
	Cam, gear, and interpolation supported	
Power supply specifications		
	24 VDC±10% ,21.6 VDC to 26.4 VDC	
	1 A ,maximum value at 24 V voltage	
	Supports protection against short circuit and reverse wiring	
Input specifications		
	Digital input, sink/source mode	
	8	
	≥ 15VDC	
	≤ 5 VDC	
	Low speed: 2 ms to 1000 ms High speed: 2 us to 1000 us	
Output specifications		
	Transistor NPN output	
	8	

GE20 SERIES EXPANSION CARD

GE20 series expansion cards support nine types, including digital input/output, analog input/output, serial communication, clock, and TF expansion cards. Used together with Easy series compact PLCs, the GE20 can meet specific requirements and save space. At most two GE20 series expansion cards are supported by the Easy series PLC.

GE20 Model

Product Model	Description	Supported Slot	Certification
GE20-4DO-TN	Supports four sink transistor outputs.	A/B	CE
GE20-4DI	Supports four digital inputs.	A/B	CE
GE20-2AD1DA-V	Supports two analog inputs (current/voltage) and one analog voltage output.	A/B	CE
GE20-2AD1DA-I	Supports two analog inputs (current/voltage) and one analog current output.	A/B	CE
GE20-232/485-RTC	Supports RTC clock and one RS485 or RS232 channel.	B	CE
GE20-232/485	Supports one RS485 or RS232 channel.	A/B	CE
GE20-RTC	Supports RTC clock.	B	CE
GE20-TF	Supports user program and firmware upgrade.	B	CE
GE20-CAN-485	Supports CAN and RS485 communications.	A	CE

GE20 Appearance

DIGITAL EXPANSION CARD

GE20-4DO-TN & GE20-4DI

Item	GE20-4DO-TN	Item	GE20-4DI
Appearance		Appearance	
Material code	01480033	Material code	01480032
Description	Supports four sink transistor outputs.	Description	Supports four digital inputs.
Supported slot	A/B	Supported slot	A/B
IP rating	IP20	IP rating	IP20
Operating temperature	-20 °C to +55 °C	Operating temperature	-20 °C to +55 °C
Output type	Digital transistor output	Input type	Digital input
Output mode	Sink mode	Input mode	Sink/Source mode
Number of channels	4	Number of channels	4
Output voltage class (resistive load)	24 VDC (20.4 VDC to 26.4 VDC)	Input voltage class	24 VDC $\pm$ 10% (21.6 VDC to 26.4 VDC)
Output voltage class (inductive load)	0.5 A/point; 1 A/common terminal	Input current upon power-on	Input current $>$ 3.5 mA
Output voltage class (light load)	6 W/24 VDC (total)	Input current upon power-off	Input current $<$ 1.5 mA
Hardware response time upon power-on/power-off	1 W/24 VDC (total)	Input response time	$\approx$ 15 ms (hardware RC filter time)
Leakage current upon power-off	$<$ 10 uA	Voltage upon power-on	$\geqslant$ 15 VDC
Switch frequency	Resistive load: 100 Hz; inductive load: 0.5 Hz; light load: 10 Hz	Voltage upon power-off	$\leqslant$ 5 VDC
Isolation	Photocoupler isolation	Software filter time	Not supported
Protection function	Supports the surge protection device.	Isolation	Photocoupler isolation

GL20 Series I/O Module

Powerful, Stable, and Efficient Distributed I/O System

Firmware update available by connecting firmware update tools to the Type-C port

User guides and documents available by scanning the QR code
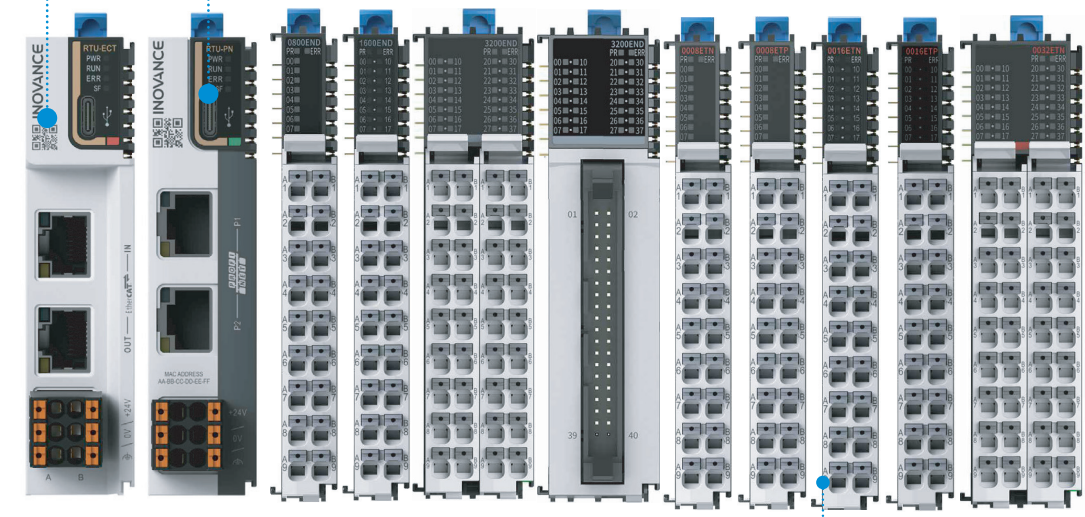
Communication interface module

Digital input module

Digital output module

Removable terminals to allow quick module replacement without disconnecting cables

Push-in terminals with large aperture to fit various types of cables and allow easy wiring without tools

DESIGN AWARD 2022

CE

c UL us LISTED

Independent status diagnosis and LED indicators;
Colored letters for quick identification of I/O functions;
Clear codes for easy wiring

D-BUS connector design with high reliability,
protecting the connector from sweat corrosion
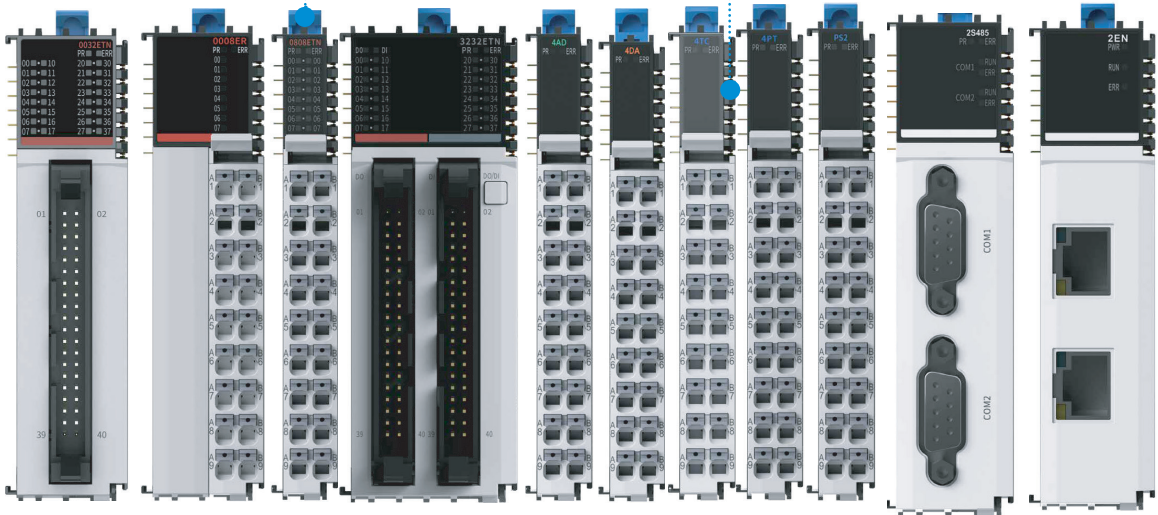
Analog module

Delay power supply module

Digital I/O module

Temperature detection module

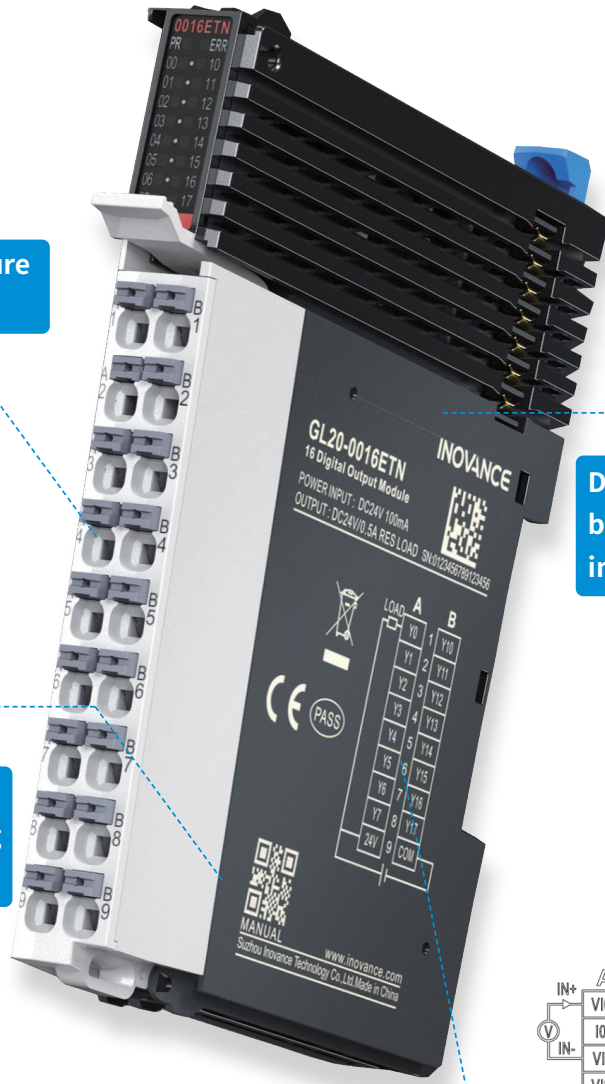**Communication expansion module**

100 Mbit/s local bus

Colored coding for modules

■ DO   ■ AO   ■ DI   ■ AI   □ Communication   ■ Others

RELIABLE STRUCTURE

Design lifetime up to ten years to guard long-term stable operation of the product
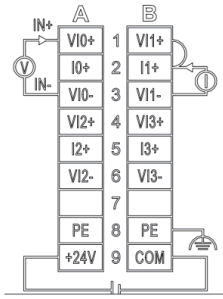
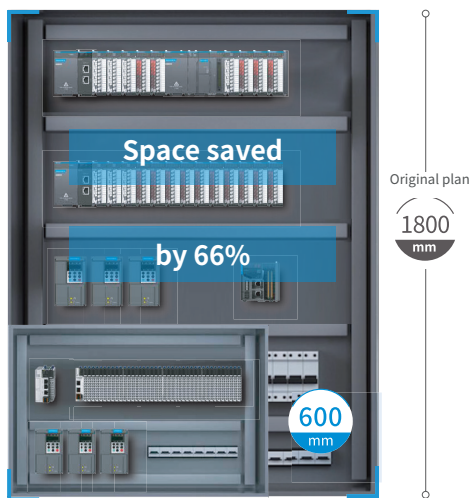**Terminals with largeaperture to allow forcible wiring**

D-BUS design with both sides clamped to improve reliability

Related documents available through scanning the QR code

GL20-0016ETN
16 Digital Output Module
POWER INPUT : DC24V 100mA
OUTPUT : DC24V/0.5A RES LOAD

INOVANCE

CE PASS

MANUAL
Suzhou Inovance Technology Co.,Ltd Made in China
www.inovance.com

Wiring diagram printed on the module

COMPACT DESIGN AND SCREW-FREE WIRING

Space saved

by 66%

Original plan

1800 mm

600 mm

Thickness reduced to
12 mm 2/ 3 cabinet space saved
Space utilization maximized

Groove-type mounting terminals to allow tool-free installation

Push-in terminals to allow easy wiring with a gentle push

Terminals with large aperture, 1.5 mm³cable, to support forcible wiring

FLEXIBLE SYSTEM INTEGRATION

AC700

Easy+GL20
EASY series PLC can be coupled with GL 20 modules directly

GL20 series modules

INOVANCE

SYSTEM TOPOLOGY

The GL20 series modules can be directly coupled with the Easy series PLCs, or connected to the standard EtherCAT master through the EtherCAT coupler module. Suitable master includes AC series, AM series, Easy500 series, H5U series, PAC series, MTC series of Inovance, as well as any standard EtherCAT masters of other vendors. The GL20 series modules can also be connected to the PN network as a distributed I/O system through the PROFINET coupler module.
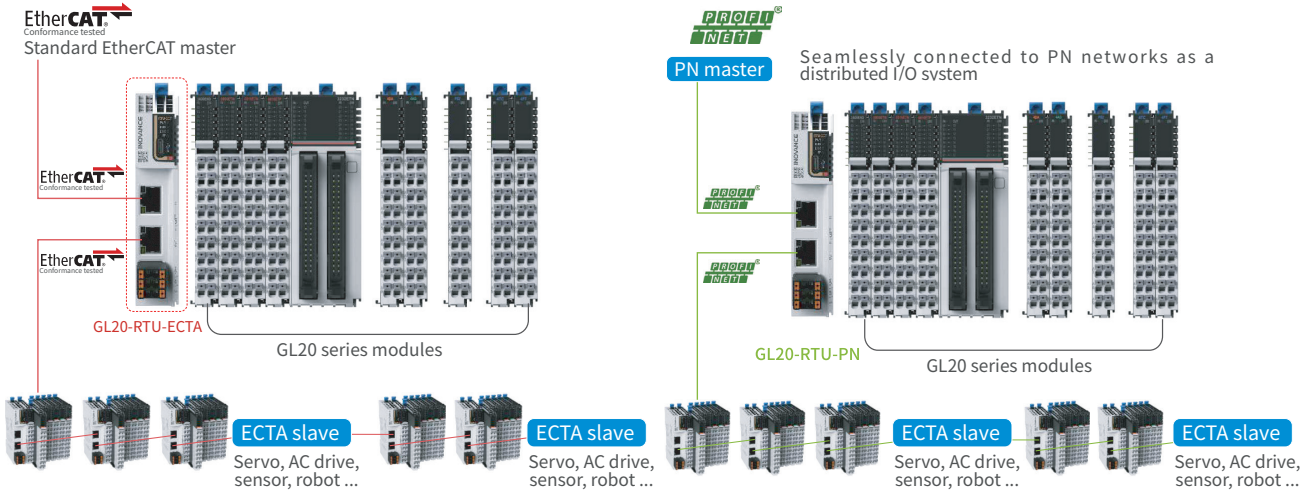
EtherCAT Coupler Specifications	
Model	GL20-RTU-ECT
IP rating	IP20
Certification	CE
Rated terminal input voltage	24 VDC (20.4 VDC to 28.8 VDC)
Rated terminal input current	0.6 A (typical@24 V)
Rated bus output voltage	5 VDC (4.75 VDC to 5.25 VDC)
Rated bus output current	2A (typical@5 V)
Power supply protection	Overcurrent protection, anti-reverse connection protection, surge absorption
Ambient operating temperature	-20° C to 55° C
Ambient operating humidity	＜ 95%RH, without condensation
Atmosphere	No corrosive gas
Ambient storage temperature	−20° C to 60° C (＜ 90%RH, without condensation)
Altitude	≤ 2000 m (80 kPa)
Pollution degree	2 or less
Immunity	2 kV on power supply line (Conforms to IEC 61000-4-4)
Overvoltage category	II
EMC immunity level	Zone B, IEC61131-2
Vibration resistance	IEC 60068-2-6
Shock resistance	IEC 60068-2-27
Minimum communication cycle	125 us
Scalability	16 modules supported

PROFINET Coupler Specifications	
Model	GL20-RTU-PN
IP rating	IP20
Certification	CE
Rated terminal input voltage	24 VDC (20.4 VDC to 28.8 VDC)
Rated terminal input current	0.6 A (typical@24 V)
Rated bus output voltage	5 VDC (4.75 VDC to 5.25 VDC)
Rated bus output current	2A (typical@5 V)
Power supply protection	Overcurrent protection, anti-reverse connection protection, surge absorption
Ambient operating temperature	-20° C to 55° C
Ambient operating humidity	＜ 95%RH, without condensation
Atmosphere	No corrosive gas
Ambient storage temperature	−20° C to 60° C (＜ 90%RH, without condensation)
Altitude	≤ 2000 m (80 kPa)
Pollution degree	2 or less
Immunity	2 kV on power supply line (Conforms to IEC 61000-4-4)
Overvoltage category	II
EMC immunity level	Zone B, IEC61131-2
Vibration resistance	IEC 60068-2-6
Shock resistance	IEC 60068-2-27
Minimum communication cycle	1 ms
Scalability	16 modules supported

ORDER INFORMATION

| Model	Description	Terminal Type
GL20 series blade I/Os can be expanded through the RTU-ECT module.		
GL20-RTU-ECT	EtherCAT communication interface module，supports any devices under EtherCAT master	Plug-in
GL20-RTU-PN	PROFINET communication interface module，supports any devices under PROFINET master	Plug-in
GL20-1600END	16-channel digital input module	Plug-in
GL20-0016ETN	16-channel digital output module (NPN)	Plug-in
GL20-0016ETP	16-channel digital output module (PNP)	Plug-in
GL20-0808ETN	8-channel input 8-channel output module (NPN)	Plug-in
GL20-0008ETN	8-channel digital output module (NPN)	Plug-in
GL20-0008ETP	8-channel digital output module (PNP)	Plug-in
GL20-0800END	8-channel digital input module	Plug-in
GL20-0008ER	8-channel relay output module	Plug-in
GL20-4AD	4-channel analog input module	Plug-in
GL20-4DA	4-channel analog output module	Plug-in
GL20-4PT	4-channel thermal resistor input temperature detection module	Plug-in
GL20-4TC	4-channel thermocouple input temperature detection module	Plug-in
GL20-0032ETN*	32-channel digital output module (NPN, push-in design)	Plug-in
GL20-3200END*	32-channel digital input module (push-in terminal)	Plug-in
GL20-0032ETN-M	32-channel digital output module (NPN, one set of MIL connector and connecting cable required)	Plug-in
GL20-3200END-M	32-channel digital input module (one set of MIL connector and connecting cable required)	Plug-in
GL20-3232ETN-M	32-channel digital output module (NPN, two sets of MIL connector and connecting cable required)	
GL20-PS2*	Relay power module (one PS2 module can power additional 16 expansion modules)	Plug-in
GL20-2S485*	2-channel RS485 communication expansion module (DB9 interface)	Plug-in
GL20-2EN*	Ethernet module (IP expansion)	Plug-in
GL20-2SSI*	2-channel SSI encoder module	Plug-in
GL20-2COM*	2-channel COM module (support for 2 x RS232 / 2 x RS485 / 1 x RS422, push-in design)	Plug-in
* Please contact Inovance for the launch time of this product.		
GL20 Accessories		
Terminal block	Works with GL20-0032ETN-M/GL20-3200END-M/GL20-3232ETN-M	Cross screw
Terminal block cable	Works with GL20-0032ETN-M/GL20-3200END-M/GL20-3232ETN-M, cable length 0.5 m	-
Terminal block cable	Works with GL20-0032ETN-M/GL20-3200END-M/GL20-3232ETN-M, cable length 2 m	-

IT7000 Series

High-Performance HMI

HARDWARE CONFIGURATION

Model	IT7070E	IT7070T	IT7070S	IT7100E	IT7100S	IT7150E
Display size	7.0"			10.1"		15.0"
Resolution	800*480			1024*600		1024*768
Dimensions L*W*D (mm)	200*146*35			271*213*36		367.8*294.8*53
CPU	Cortex A8 600MHz			Cortex A8 1GHz		Cortex A8 1GHz
RTC	√	√	√	√	√	√
DRAM	128 MB			256 MB DDR3	128 MB DDR3	256 MB DDR3
Flash memory	128 MB			256 MB	128 MB	256 MB
Brightness (cd/㎡)	350			350		300
Display color	24-bit true color			24-bit true color		24-bit true color
Backlight	LED			LED		LED
Backlight service life	35,000 hrs			30,000 hrs		50,000 hrs
SD card slot	√	×	×	√	×	√
USB port	1 x USB 2.0					
USB download port	1 x Mini USB					
Ethernet port	√	×	×	√	√	√
Serial port	COM1 (RS422/RS485) COM2 (RS232) COM3 (RS485)	COM1 (RS422/RS485) COM2 (RS232)	COM1 (RS422/RS485)	COM1 (RS422/RS485) COM2 (RS232) COM3 (RS485)	COM1 (RS422/RS485)	COM1 (RS422/RS485) COM2 (RS232) COM3 (RS485)
IP rating	Front panel IP65, rear cover IP20			Front panel IP65, rear cover IP20		Front panel IP65, rear cover IP20

- Highly expansible, meet the customized control needs in different industries with APIs
- Support single-unit and multi-unit network communication through serial port, Ethernet, and WIFI
- Support mainstream PLCs, AC drives, and servo communication protocols from Inovance and other manufacturers, as well as standard Modbus and ModbusTCP protocols
- Support VNC, project HMI anytime, anywhere on mobile devices
- Industrial-grade manufacturing process
- Built-in InoTouchPad configuration software, ensure flexible configuration functions and ease of use
- Rich gallery resources and customizable interface style settings, perfect for creating your own user interface

FLEXIBLE NETWORKING SOLUTIONS
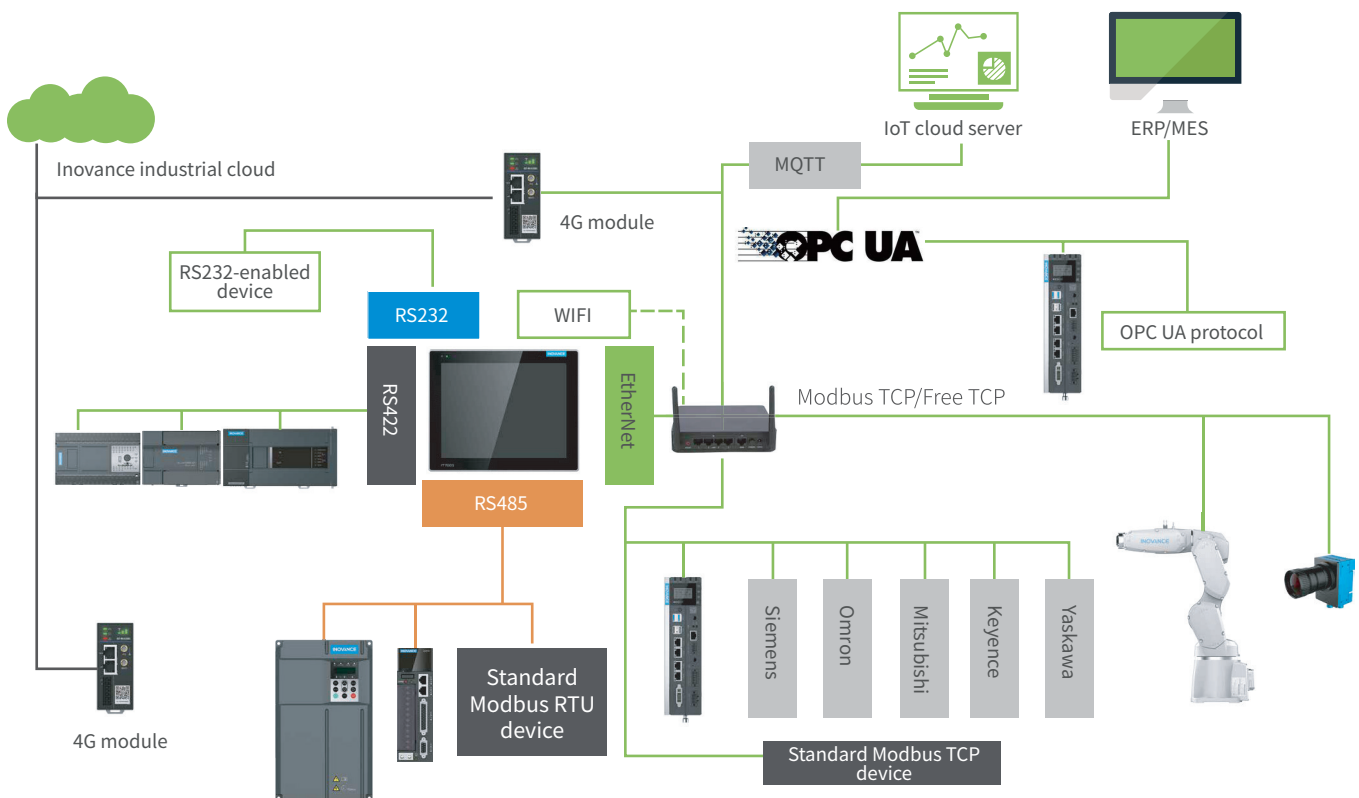
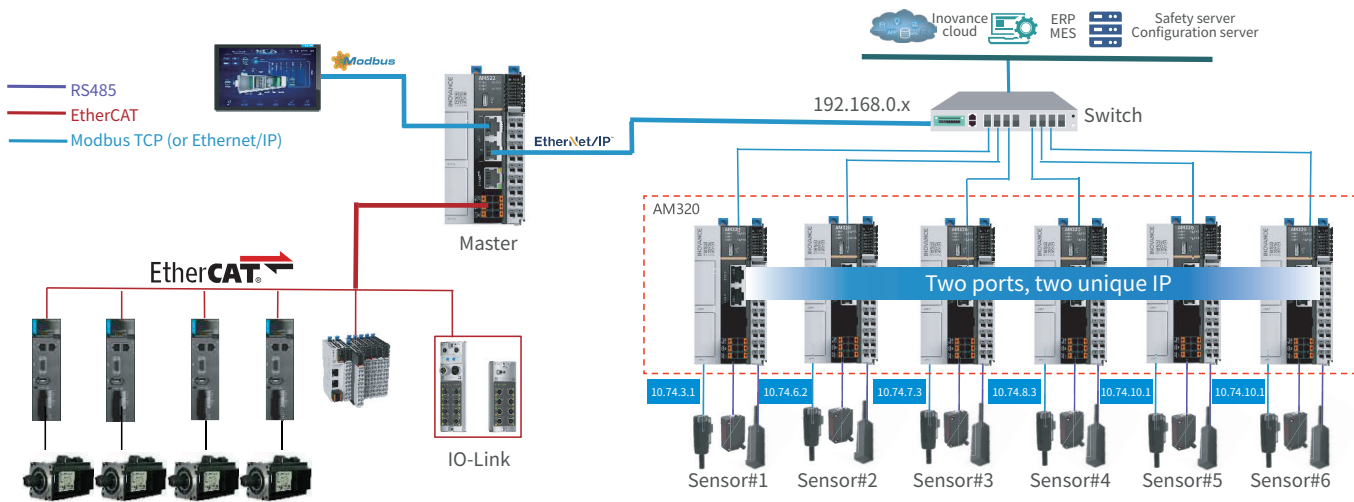| Protocol	INOVANCE products
Modbus	Standard Modbus device
OPC UA	Supports OPC UA Client; Server not supported
MQTT	Supports standard MQTT protocol
Free protocol	Supports connection between Inovance PLCs (H1U/H2U/H3U/H5U) and other third-party devices that support the free protocol, can serve as Master or Slave

AM300/500 Series

Motion Controller

PRODUCT CONFIGURATION

|	AM500 Series (With EtherCAT motion control)		AM300 Series (Without EtherCAT motion control)
CPU	AM521	AM522	AM320
Input power	24 VDC±10%, 1A, short-circuit / reverse connection protection		
I/O	8-input (source/sink), 8-output (sink)		
Data/program storage capacity	10 MB for program, 20 MB for data (512 KB retentive memory)		
Instruction processing speed — Bit processing instruction	0.143 µs		
Instruction processing speed — Word processing instruction	0.416 µs		
Communication specifications — RJ45 — EtherNet	2 x Ethernet (built-in switch)		2 x Ethernet (2 independent IP addresses)
Communication specifications — RJ45 — EtherCAT	1 x EtherCAT		Not supported
Communication specifications — Number of serial ports	3 x RS485 (1 built-in RS485 port, 2 RS485 ports offered via expansion card)		
Communication specifications — CAN communication	Support for expansion of one communication channel via expansion card (max. 63 slaves)		
EtherCATbus specifications — Number of EtherCAT axes	8	16	Not supported
EtherCATbus specifications — Number of EtherCAT slaves	Max. 127 EtherCAT slaves		
EtherCATbus specifications — Typical communication cycle	1 ms for synchronization of 4 axes		
Local pulse axis	4 x pulse axes		
Local encoder axis	8 x encoder axes, supports single-phase CW/CCW		
Scalability — Expansion module	Supports local expansion of full range of GL20 series modules (max. 16), and remote expansion of IO-Link and GL10-GR10 series modules		
Scalability — Expansion card	Supports expansion of GE20 series modules (COM/CAN, digital, analog, TF card, RTC card) via two card slots		
Other interfaces	Type-C (power supply to PLC, upload and download of program)		
Configuration software	InoProShop (conforms to IEC 61131-3)		

RS485
EtherCAT
Modbus TCP (or Ethernet/IP)

Modbus

Master

EtherNet/IP

EtherCAT

IO-Link

Inovance cloud   ERP MES   Safety server Configuration server

192.168.0.x   Switch

AM320

Two ports, two unique IP

10.74.3.1   10.74.6.2   10.74.7.3   10.74.8.3   10.74.10.1   10.74.10.1

Sensor#1   Sensor#2   Sensor#3   Sensor#4   Sensor#5   Sensor#6

INDUSTRY APPLICATIONS

Packaging: Sanitary products

Printing: Flexographic & Gravure printing
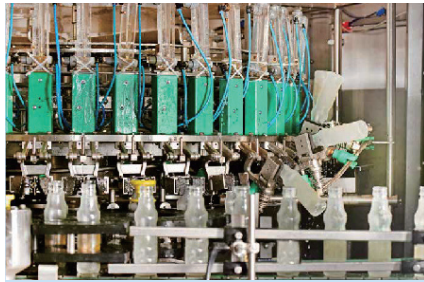
Food & Beverage: Filling & Capping

Warehousing: Palletizing
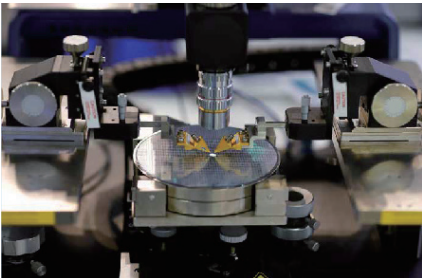
Semiconductor silicon wafer: CVD
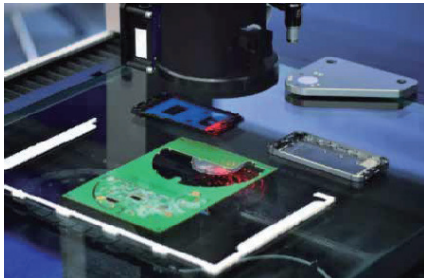
Mobile phone: Labeling

Medical: Filling machine
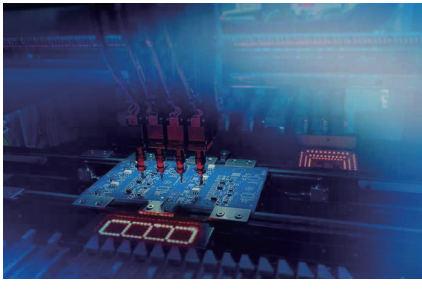
SMT

Sewage treatment

INOVANCE

SOFTWARE

For INOVANCE Controllers

AutoShop

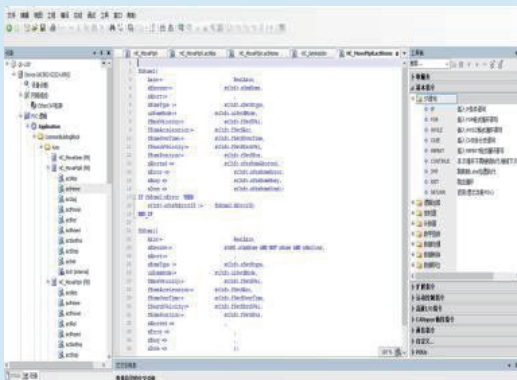**For HXU/Easy Series small-sized PLCs**
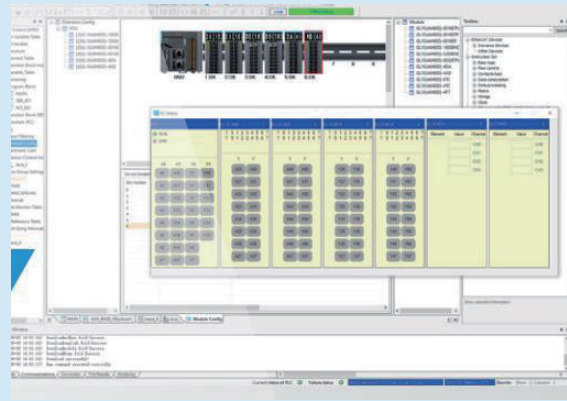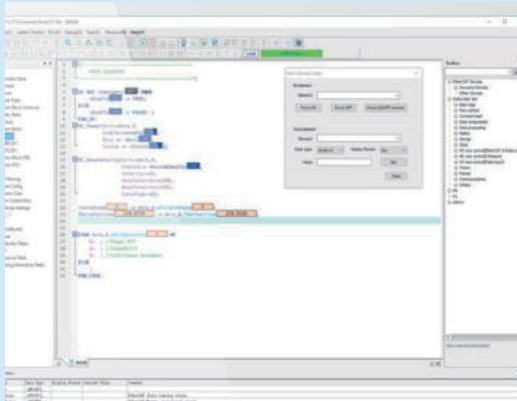
Non-standard	**Simulation with HMI (H5U,Easy)**

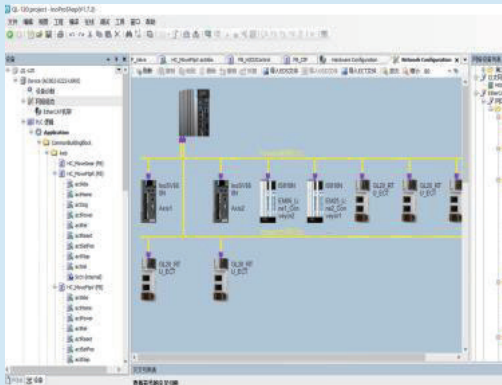| **EC-61131 & PLC Open**	**Simulation & Debugging**

Standard	**Breakpoint debugging**
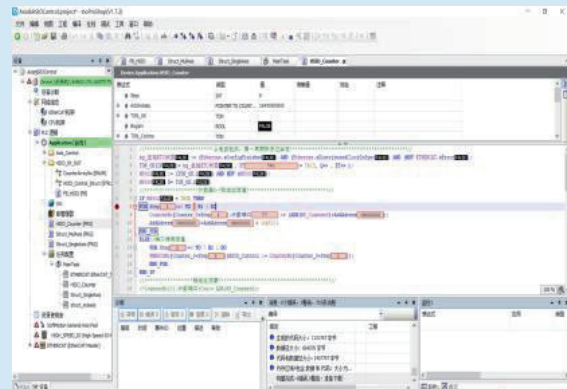
InoProShop

For INOVANCE AM Series mediun-sized PLCs & AC Series intellgent controllers

Within 32 axes

EtherNet/IP
EtherCAT

EtherNet/IP
Up to 72 EtherCAT slaves, including 32 axes

Performance

Communication & Motion Control

Within 256 axes

EtherNet/IP & OPC UA
Up to 256 EtherCAT slaves

OPC UA
EtherNet/IP
EtherCAT

INOVANCE

011024500