

## Easy Series PLC

High performance, compact, EtherCAT-enabled PLC



- Compact footprint
- A complete product range – from the simplest to the most complex motion control capable PLC
- PLCopen compliant axis control
- Simulation mode for offline debugging
- Real-time fieldbus



# Easy series PLC: a comprehensive product range

## Easy300

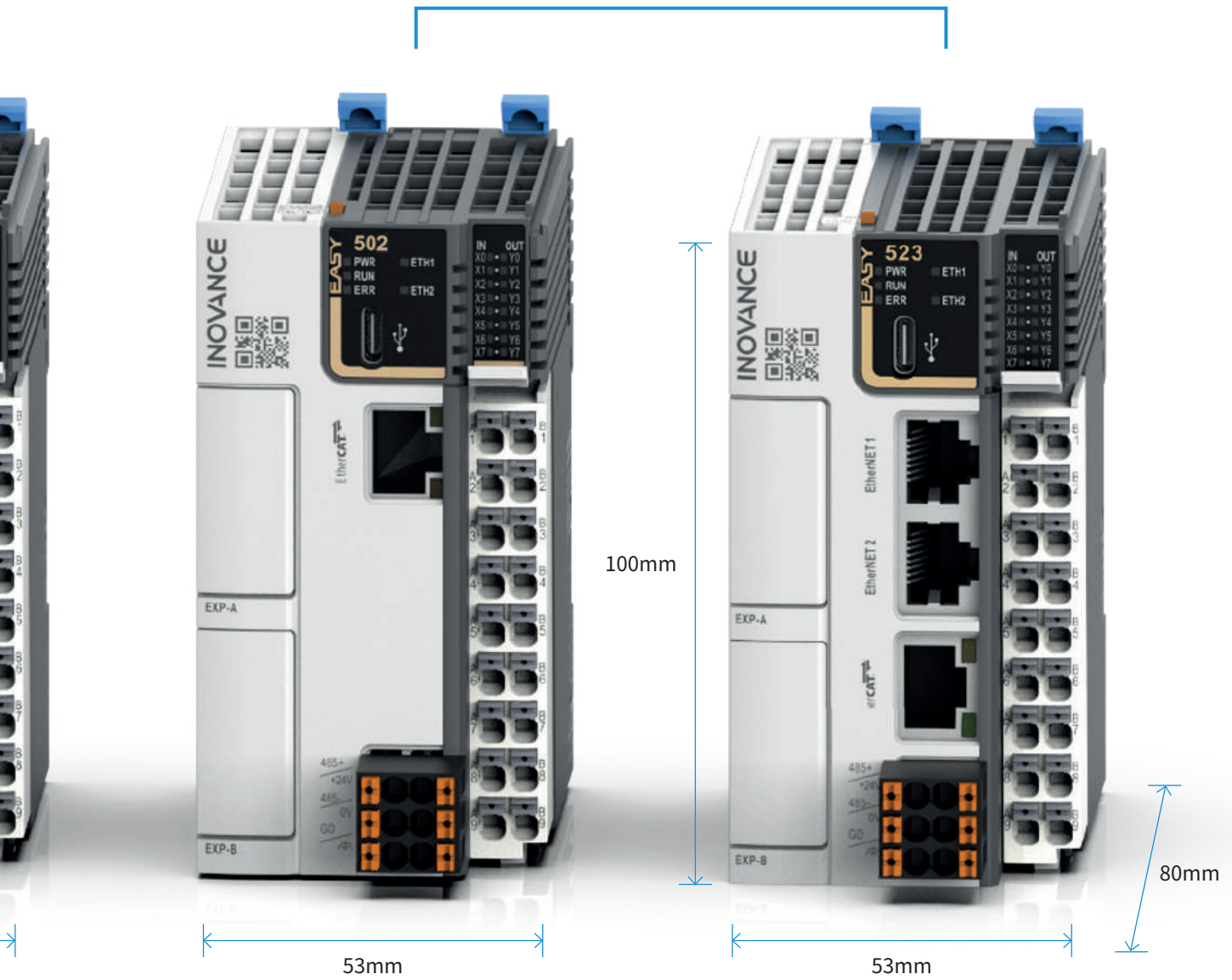


**Ultra compact CPU**  
Easy301  
RS232 + RS485

**General CPU**  
Easy302  
RS232 + RS485

**CPU with Ethernet**  
Easy320  
Dual Ethernet + RS485

# Easy500



**Motion control CPU**  
Easy502  
EtherCAT + RS485

**Motion control CPU with Ethernet**  
Easy523 Dual Ethernet  
+ EtherCAT + RS485



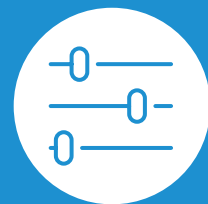
### EASY programming

Customized FB/FC - self defined variable programming assistant



### EASY assembly & wiring

Easy to add and/or replace modules. Plug in wires directly with spring clamp terminals



### EASY commissioning

Auto device scanning, easy configuration, servo debug without programming, offline simulation



The type-C port works as a programming port allowing support programs, uploading/downloading and debugging.



Easy wiring with spring clamp terminals.



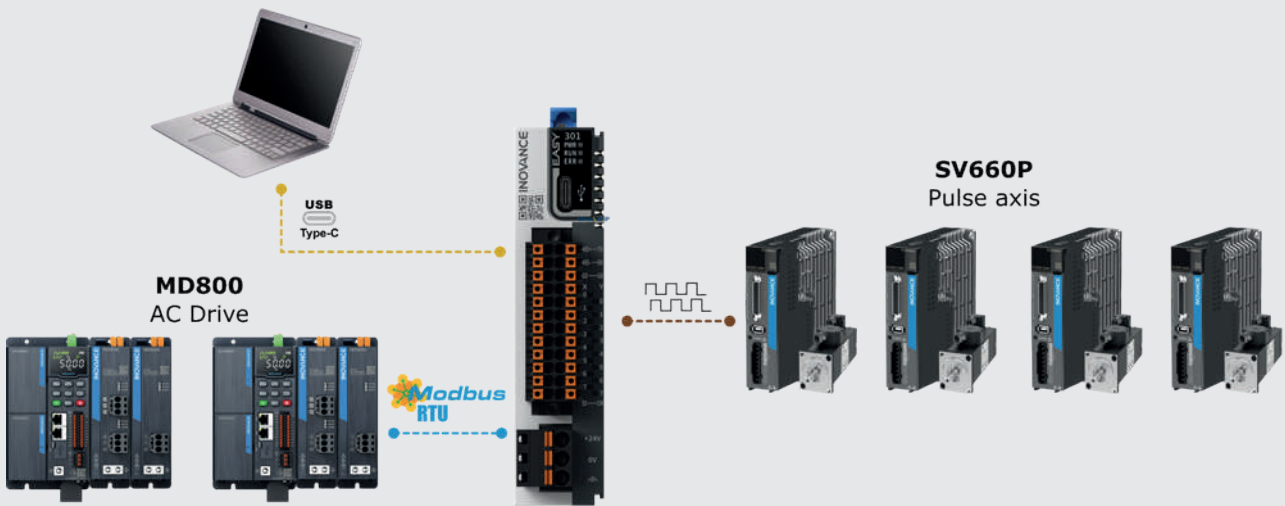
Slim and compact I/O expansion modules (GL20). Easy to plug in and remove for fast replacement.

# Scalable system architecture

## Multiple configurations

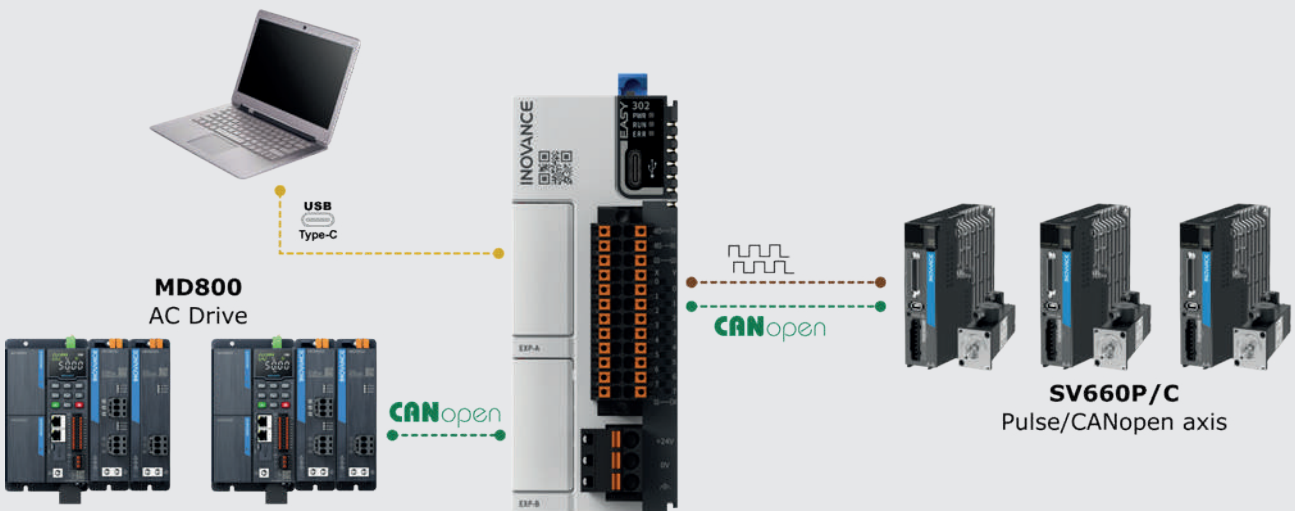
### Easy301

Cost effective architecture using Modbus RTU communication and/or pulses to control the drives.



### Easy302

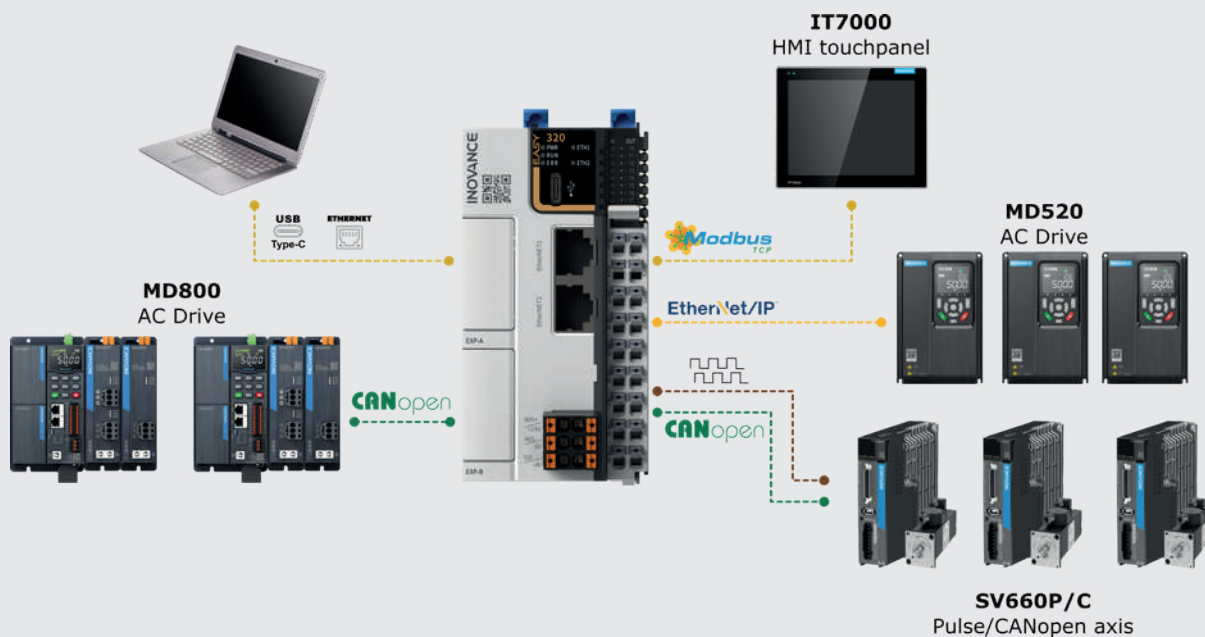
Flexible architecture using CANopen communication and/or pulses to control the drives.



The Easy PLC series can cover anything from the simplest pulse control architecture to the most complex motion control applications using EtherCAT and Ethernet/IP

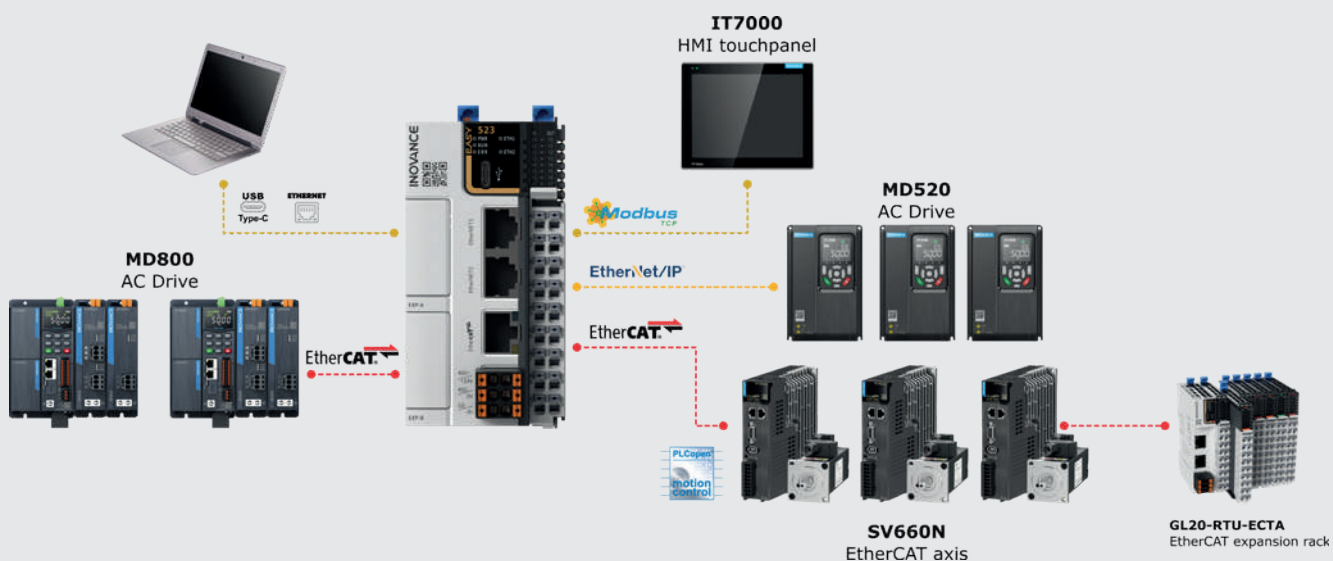
## Easy320

Multiprotocol architecture using Ethernet/IP, CANopen communication and/or pulses to control the drives, and Modbus TCP with the HMI touchpanel



## Easy523

Powerful motion control architecture using realtime EtherCAT communication and Ethernet/IP to control the drives, and Modbus TCP with the HMI touchpanel



# Specifications

## Basic specifications of easy series controller

| Item                              | Easy300   |  |  |
|-----------------------------------|---|--|--|
|                                   | Easy301-0808TN  | Easy302-0808TN   | Easy320-0808TN   |
| <b>Part number</b>                | 01440323  | 01440324   | 01440325   |
| <b>Motion axis</b>                | 4 pulse control axes  | 5 pulse control axes   | 5 pulse control axes   |
| <b>Expansion modules (GL20)</b>   | 8   | 16   |  |
| <b>Expansion slots (GE20)</b>     | –   | 2 (support communication/digital IO/analog IO/TF card/R)   |  |
| <b>Ethernet</b>                   | –   | 2<br>Modbus TCP up to 32 slaves<br>Ethernet/IP scanner/adap  |  |
| <b>EtherCAT</b>                   | –   |  |  |
| <b>Serial communication</b>       | 1 x RS232<br>1 x RS485<br>Support free protocol,<br>Modbus RTU/ASC<br>up to 16 slaves     | 1 x RS232, 1 x RS485<br>Support 1 x RS232/485<br>expansion and 1 x CAN<br>expansion<br>Support free protocol,<br>Modbus RTU/ASC<br>16 slaves (recommended) | 1 x RS485<br>Support 2 x RS232 /485<br>expansion and 1 x CAN<br>expansion<br>Support free protocol,<br>Modbus RTU/ASC<br>16 slaves (recommended) |
| <b>CAN communication</b>          | –   | 1 (requires expansion card), supports CANlink/CANopen m  |  |
| <b>Program storage</b>            | 128 K step  |  |  |
| <b>Data storage</b>               | 1 Mbyte (128 KB non-volatile)<br>150 KB soft element, non-volatile after No.1000          |  |  |
| <b>Instruction execution time</b> | 20 K step / 2 ms  |  |  |
| <b>Dimensions (WxHxD: mm)</b>     | 24x100x83   | 40x100x83  | 53x100x80  |
| <b>Other interfaces</b>           | Type C  | Type C, TF card (requires TF card expansion module)  |  |
| <b>CAM and interpolation</b>      | –   | Supports CAM and interpolation motion  |  |
| <b>Encoder axis</b>               | 4 channel encoder axis (8 x high speed inputs, up to 200 KHz)                             |  |  |
| <b>Built in I/Os</b>              | 8 inputs (selectable sink/source) and 8 outputs (sink type - available, source type - con |  |  |
| <b>Programming languages</b>      | LD, SFC, ST, FB/FC (supports encryption functionality)                                    |  |  |
| <b>Power supply</b>               | DC24V   |  |  |

<sup>1</sup>Synchronised axes

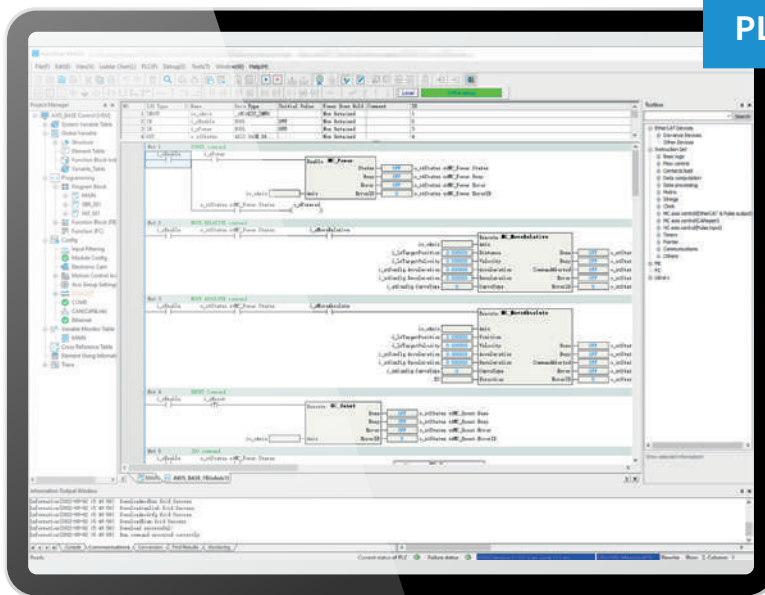
<sup>2</sup>EtherCAT slaves include I/Os and synchronised and non-synchronised axes

| Easy500  |  |
|--|--|
| Easy502-0808TN   | Easy523-0808TN   |
| 01440336   | 01440326   |
| A total of 16 synchronised axes are possible. This can be a max. of 16 EtherCAT axes <sup>1</sup> , or a combination that includes a max. of five pulse control axes | A total of 32 synchronised axes are possible. This can be a max. of 32 EtherCAT axes <sup>1</sup> , or a combination that includes a max. of five pulse control axes |
| TC)  |  |
| es<br>ter  | –  |
|  | 2  |
|  | Modbus TCP up to 32 slaves<br>Ethernet/IP scanner/adapter  |
| Support up to 72 EtherCAT slaves <sup>2</sup> (including synchronised axes)  |  |
| 1 x RS485<br>Support 2 x RS232/485 expansion and 1 x CAN expansion<br>Support free protocol, Modbus RTU/ASC 16 slaves (recommended)                                  | 1 x RS485<br>Support 2 x RS232/485 expansion<br>Support free protocol, Modbus RTU/ASC 16 slaves (recommended)  |
| master/slave (up to 62 slaves)   |  |
| 200 k step   |  |
| 2 Mbyte (128 KB non-volatile)  |  |
| 20 K step / 1.6 ms   |  |
| ning soon)   |  |

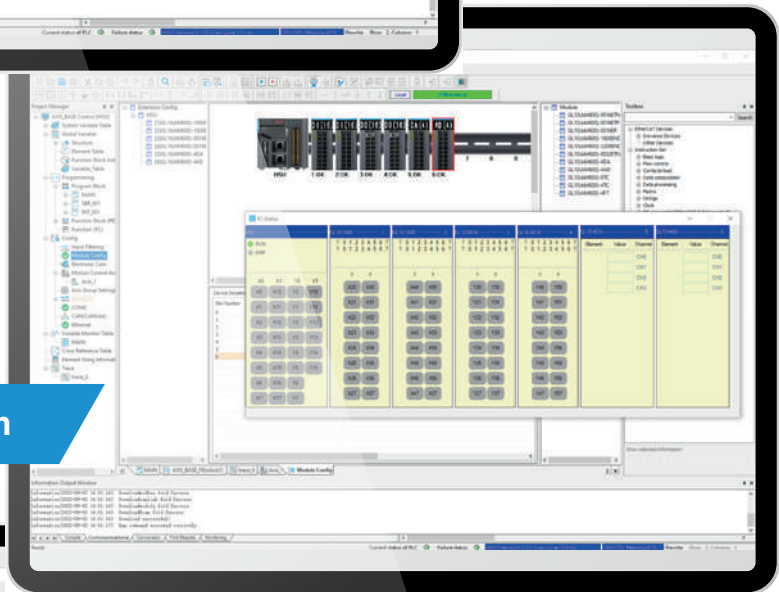
# Autoshop

A powerful PC tool is provided as standard

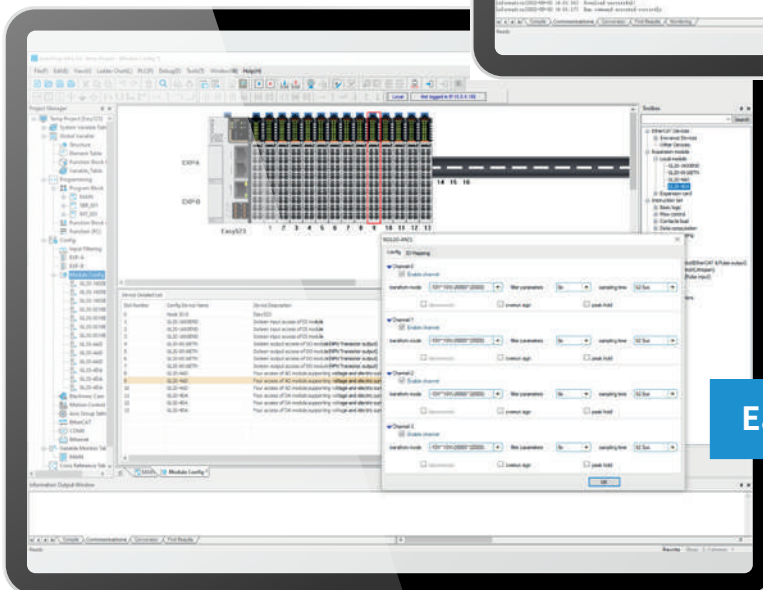
PLCopen FB



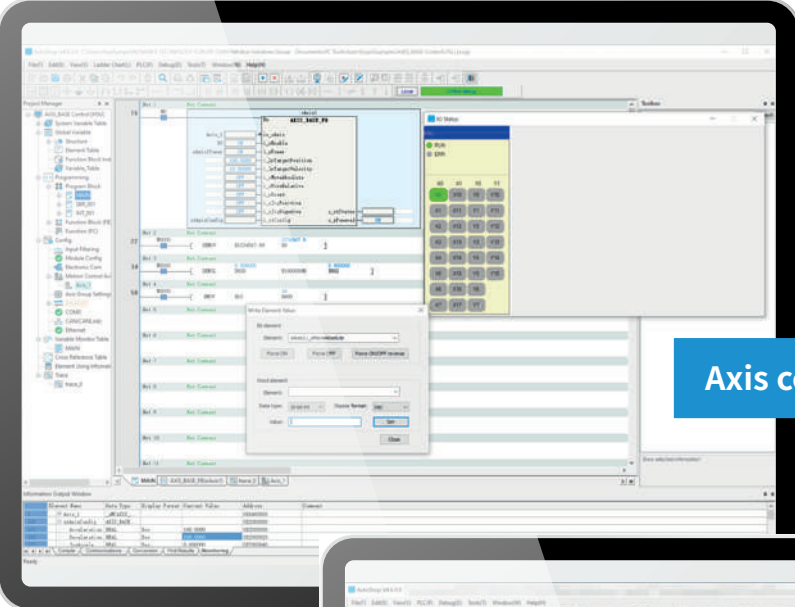
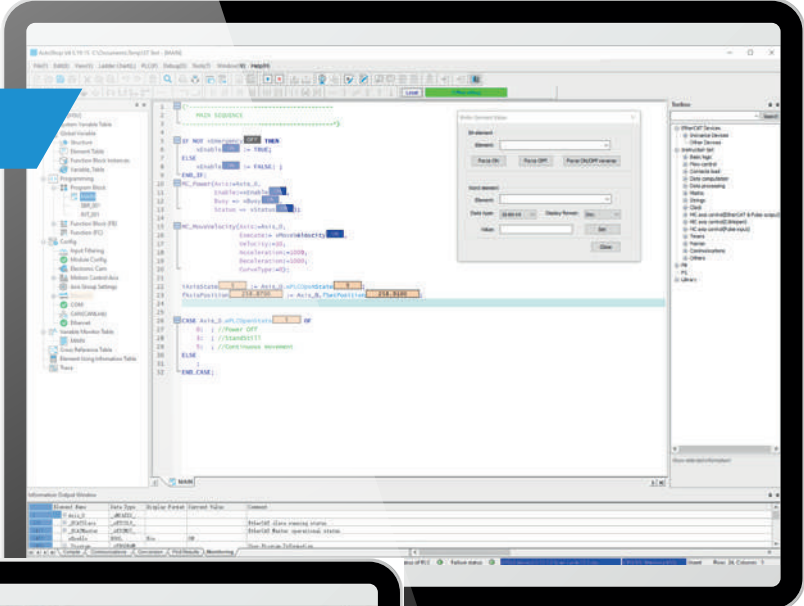
Hardware simulation



Easy hardware configuration

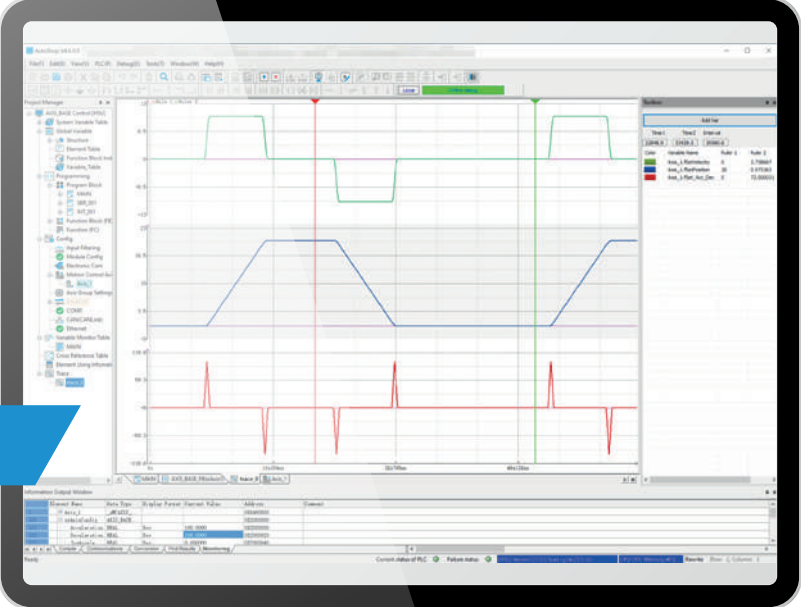


ST programming



Axis commissioning tool

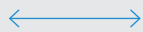
Trace



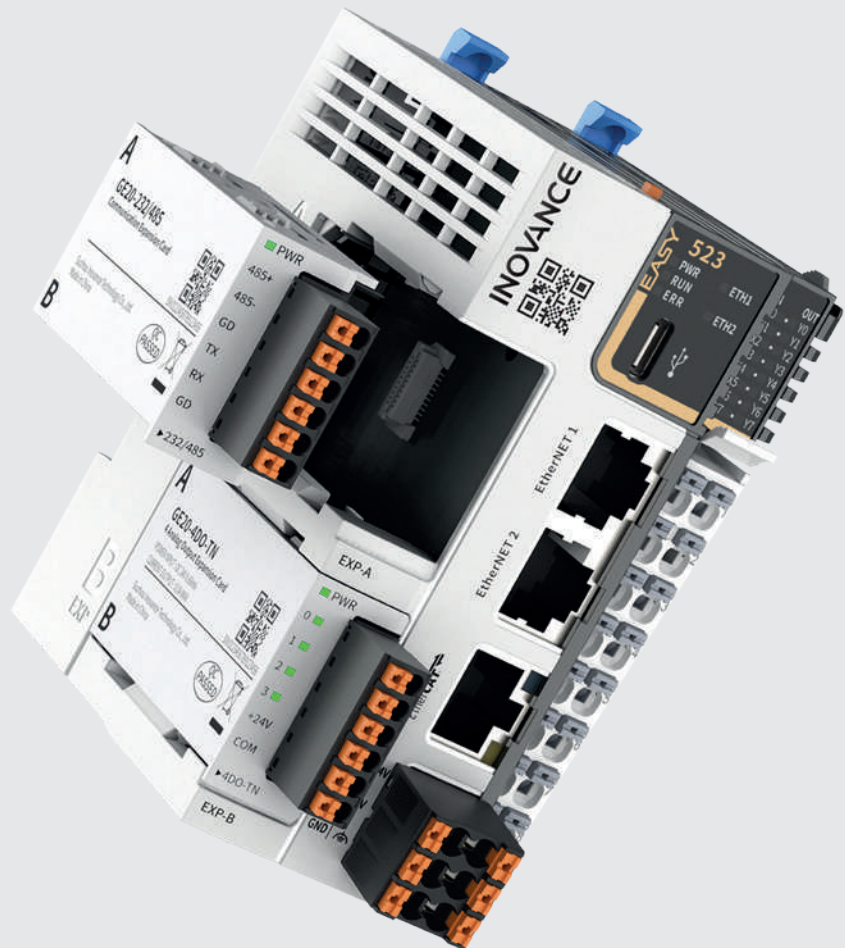
# Expansion capability

## GE20 Expansion cards

Expansion slot A



Expansion slot B



### Communications capabilities

- RS485 connection - up to 31 slaves
- CANopen - up to 62 slaves
- CANlink - up to 62 slaves
- Modbus TCP - up to 32 slaves (working as client/master)
- Modbus TCP - up to 16 masters (working as server/slave)
- Up to 3 serial ports (RS232/485) - 1 onboard and 2 GE20 expansion cards

Please note: GE20 expansion cards are not applicable to Easy301 CPU.

| Product appearance  | Expansion card   | Product code | Description                                  | Slot A | Slot B |
|---|------------------|--------------|--|--------|--------|
|    | GE20-4DO-TN      | 01480033     | 4 channel sink outputs                       | ✓      | ✓      |
|    | GE20-4DI         | 01480032     | 4 channel source/sink inputs                 | ✓      | ✓      |
|    | GE20-2AD1DA-I    | 01480027     | 2 analog inputs and 1 analog current output  | ✓      | ✓      |
|   | GE20-2AD1DA-V    | 01480028     | 2 analog inputs and 1 analog voltage output  | ✓      | ✓      |
|  | GE20-232/485-RTC | 01480035     | RS232/485 expansion card with RTC            |        | ✓      |
|  | GE20-232/485     | 01480029     | RS232/485 expansion card                     | ✓      | ✓      |
|  | GE20-CAN-485     | 01480034     | CAN/RS485 expansion card with RJ45 interface | ✓      |        |
|  | GE20-RTC         | 01480031     | RTC expansion card                           |        | ✓      |
|  | GE20-TF          | 01480030     | TF expansion card                            |        | ✓      |

Expansion card size: 54\*30\*1.2 (mm)


# Expansion capability


## GE20 Expansion cards

### Digital expansion card

| Material code             | 01480033  | Material code           | 01480032  |
|---------------------------|---|-------------------------|---|
| Appearance                |  | Appearance              |  |
| Model                     | GE20-4DO-TN   | Model                   | GE20-4DI  |
| Description               | 4 channel output module   | Description             | 4 channel input module  |
| Slot                      | A/B   | Slot                    | A/B   |
| IP level                  | IP20  | IP level                | IP20  |
| Operational temperature   | -20 °C ~ 55 °C  | Operational temperature | -20 °C ~ 55 °C  |
| Output type               | Digital transistor  | Input type              | Digital transistor  |
| Source/sink (PNP/NPN)     | Sink (NPN)  | Source/sink (PNP/NPN)   | Source/sink   |
| Channels                  | 4   | Channels                | 4   |
| Output voltage            | 24 V DC (20.4 V DC ~ 26.4 V DC)   | Input voltage           | 24 V DC $\pm$ 10% (21.6 V DC ~ 26.4 V DC)   |
| Output (resistance load)  | 0.5 A/point, 1 A/common point   | Input resistance        | 5.6 k $\Omega$  |
| Output (inductance load)  | 6 w/24 V DC (in total)  | ON current              | >3.5 mA   |
| Output (lamp load)        | 1 w/24 V DC (in total)  | OFF current             | <1.5 mA   |
| Hardware ON/OFF response  | Within 100 us   | Input response          | $\approx$ 15 ms (hardware RC filter)  |
| Leakage current (ON->OFF) | 10 uA below   | ON voltage              | $\geq$ 15 V DC  |
| Frequency                 | Resistance load: 100 Hz,<br>inductance load: 0.5 Hz,<br>lamp load: 10 Hz          | OFF voltage             | $\leq$ 5 V DC   |
| Isolation                 | Opto-isolation  | Software filter         | NOT support   |
| Protection function       | Surge suppression   | Isolation               | Opto-isolation  |

# Analog expansion card




| Material code                   | 01480028  |                                  |                  |
|---------------------------------|---|----------------------------------|------------------|
| Appearance                      |  |                                  |                  |
| Model                           | GE20-2AD1DA-V   |                                  |                  |
| Description                     | 2 channel analog inputs plus 1 channel analog input, voltage type                 |                                  |                  |
| Slot                            | A/B   |                                  |                  |
| IP level                        | IP20  |                                  |                  |
| Operational temperature         | -20 °C~55 °C  |                                  |                  |
| Input type                      | Analog input  | Output type                      | Analog output    |
| Input mode                      | Current/voltage   | Output mode                      | Voltage          |
| Input channels                  | 2   | Output channel                   | 1                |
| Resolution                      | 12 bit  | Resolution                       | 12 bit           |
| Conversion time                 | 6 ms/channel  | Conversion time                  | 1 ms/channel     |
| Input range                     | 0 ~ 10 v/0 mA ~ 20 mA   | Output range                     | 0 ~ 10 v         |
| Current input resistance        | 250 Ω   | Voltage output resistance        | >2 KΩ            |
| Input accuracy (25 °C)          | Voltage ±1%, Current ±1% (full range)   | Output accuracy (25 °C)          | ±1% (full range) |
| Input accuracy (-20 °C ~ 55 °C) | Voltage ±3%, Current ±3% (full range)   | Output accuracy (-20 °C ~ 55 °C) | ±5% (full range) |
| Digital input range             | 0 ~ 20,000  | Digital output range             | 0 ~ 20,000       |

| Material code                   | 01480027  |                                  |                  |
|---------------------------------|---|----------------------------------|------------------|
| Appearance                      |  |                                  |                  |
| Model                           | GE20-2AD1DA-I   |                                  |                  |
| Description                     | 2 channel analog inputs plus 1 channel analog input, current type                   |                                  |                  |
| Slot                            | A/B   |                                  |                  |
| IP level                        | IP20  |                                  |                  |
| Operational temperature         | -20 °C ~ 55 °C  |                                  |                  |
| Input type                      | Analog input  | Output type                      | Analog output    |
| Input mode                      | Current/ voltage  | Output mode                      | Current          |
| Input channels                  | 2   | Output channel                   | 1                |
| Resolution                      | 12 bit  | Resolution                       | 12 bit           |
| Conversion time                 | 6ms/ channel  | Conversion time                  | 1 ms/channel     |
| Input range                     | 0 ~ 10 v/ 0 mA ~ 20 mA  | Output range                     | 0 mA ~ 20 mA     |
| Current input resistance        | 250 Ω   | Current output resistance        | 0 Ω ~ 500 Ω      |
| Input accuracy (25 °C)          | Voltage ±1%, Current ±1% (full range)   | Output accuracy (25 °C)          | ±1% (full range) |
| Input accuracy (-20 °C ~ 55 °C) | Voltage ±3%, Current ±3% (full range)   | Output accuracy (-20 °C ~ 55 °C) | ±5% (full range) |
| Digital input range             | 0 ~ 20,000  | Digital output range             | 0 ~ 20,000       |


# Expansion capability

## GE20 Expansion cards


### Communication expansion card

| Material code            | 01480035  | 01480029   | 01480034  |
|--------------------------|---|--|---|
| Appearance               |  |  |    |
| Model                    | GE20-232/485-RTC  | GE20-232/485   | GE20-CAN-485  |
| Description              | RS232/RS485 communications card with RTC  | RS232/ RS485 communications card   | CAN/RS485 communications card   |
| Slot                     | B   | A/B  | A   |
| IP level                 | IP20  | IP20   | IP20  |
| Operational temperature  | -20 °C ~ 55 °C  | -20 °C ~ 55 °C   | -20 °C ~ 55 °C  |
| RS485/RS232              | 1   | 1  | 1   |
| Terminal resistor        | Set via DIP switch  | Set via DIP switch   | NO terminal resistor for RS485<br>Built-in terminal resistor for CAN  |
| Communications ability   | Up to 31 slaves<br>Distance between adjacent slaves not over 3m                   | Up to 31 slaves<br>Distance between adjacent slaves not over 3 m                   | Up to 31 slaves(RS485)<br>Distance between adjacent slaves not over 3 m<br>Up to 63 slaves (CAN)  |
| Baud rate of RS485/RS232 | 9600/19200/38400/<br>57600/115200 bit/s   | 9600/19200/38400/<br>57600/115200 bit/s  | 9600/19200/38400/<br>57600/115200 bit/s   |
| Baud rate of CAN         | /   | /  | 1 Mbit/s: distance < 20 m<br>500 kbit/s: distance < 80 m<br>250 kbit/s: distance < 150 m<br>125 kbit/s: distance < 300 m<br>100 kbit/s: distance < 500 m<br>50 kbit/s: distance < 1,000 m |
| RTC accuracy             | 120 sec/ month  | /  | /   |
| RTC format               | YYYY/MM/DD/HH/MM/SS   | /  | /   |
| In-built lithium battery | CR2302, 3 year life cycle, removable  | /  | /   |

## RTC expansion card

|                          |   |
|--------------------------|---|
| Material code            | 01480031  |
| Appearance               |  |
| Model                    | GE20-RTC  |
| Description              | RTC extension card  |
| Slot                     | B   |
| IP level                 | IP20  |
| Operational temperature  | -20 °C ~ 55 °C  |
| RTC accuracy             | 120 sec/month   |
| RTC format               | YYYY/MM/DD/HH/MM/SS   |
| In-built lithium battery | CR2302, 3 year life cycle, removable  |

## TF card expansion card

|                         |   |
|-------------------------|---|
| Material code           | 01480030  |
| Appearance              |  |
| Model                   | GE20-TF   |
| Description             | TF card extension card  |
| Slot                    | B   |
| IP level                | IP20  |
| Operational temperature | -20 °C ~ 55 °C  |
| SD card capacity        | NOT over 32 G   |
| SD card type            | TransFlash (Micro SD)   |

# Expansion capability

## GL20 expansion modules



### Great performance with ultra fast response

Microsecond level response | Synchronous control



### Compact size and wiring without tools

Compact size | Fast installation | Fast replacement



### Stable and reliable design

Stable connection | Gold plating process | Safety and



### Many variants to suit different systems

Multiple protocols | Many variants

Applicable to either bus coupler or CPU

se

## NEW generation distributed I/O system



d reliability

GL20 slim and compact I/O modules



# Expansion capability

## GL20 expansion modules



### Compact Size

Saves 2/3 of the space in the cabinet compared to the previous generation product – GL10

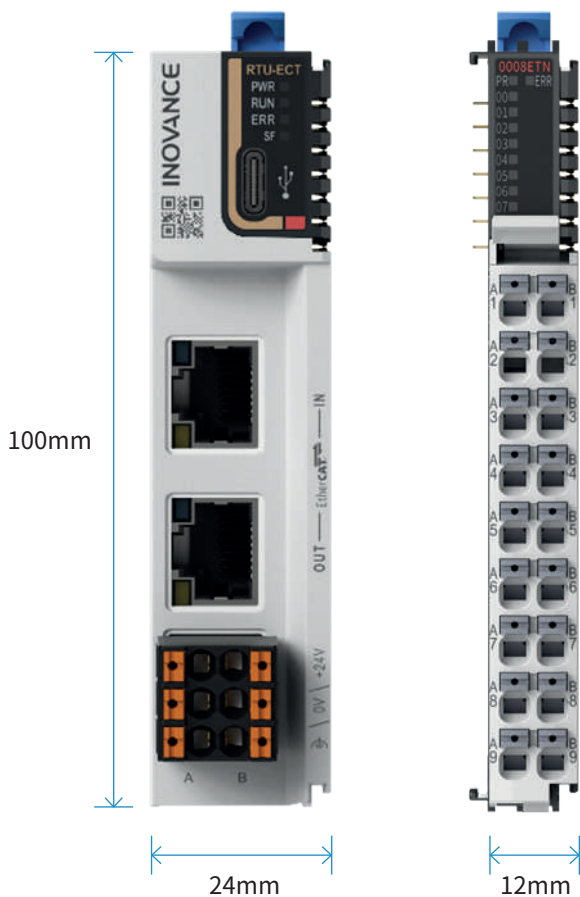
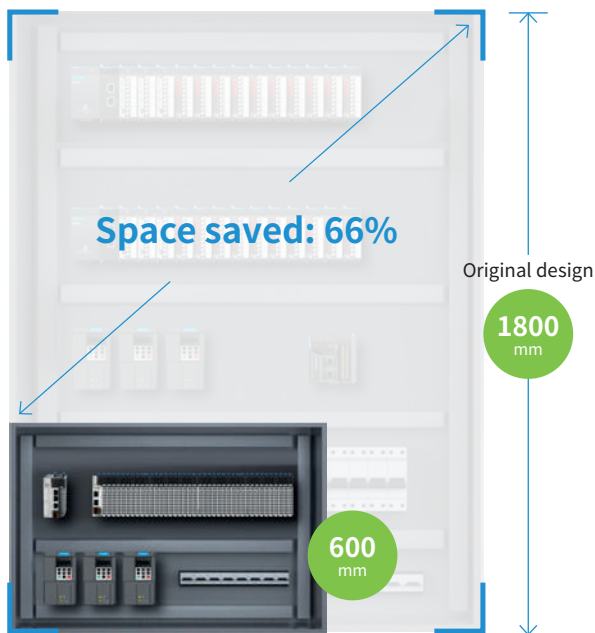
## GL20 Series

Designed for compact cabinets

Thickness reduced to **12mm**

**2/3 cabinet space saved**

Space utilisation maximised



# Compact design and tool-free wiring



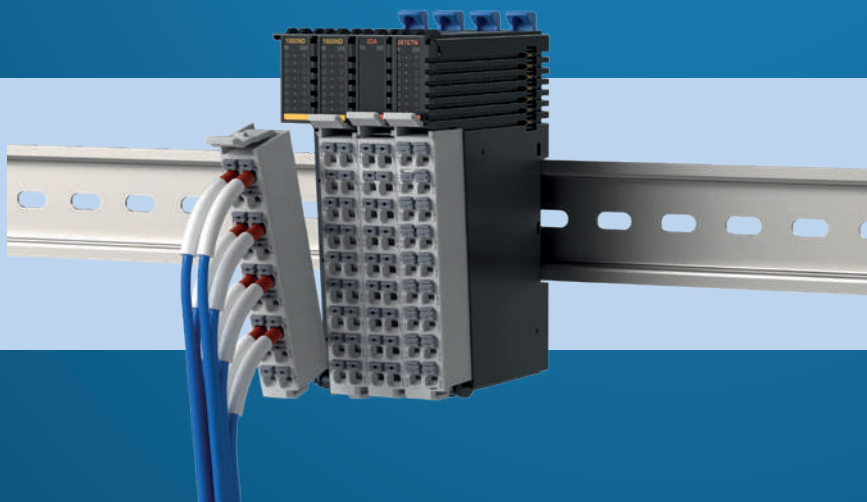
Simple lever system allows easy removal of individual modules from the DIN rail



Easy wiring with spring-type terminals, with large 1.5mm<sup>2</sup> apertures



Easy module removal



Removable terminals minimizes installation errors

# Expansion capability

## GL20 modules – EtherCAT bus coupler



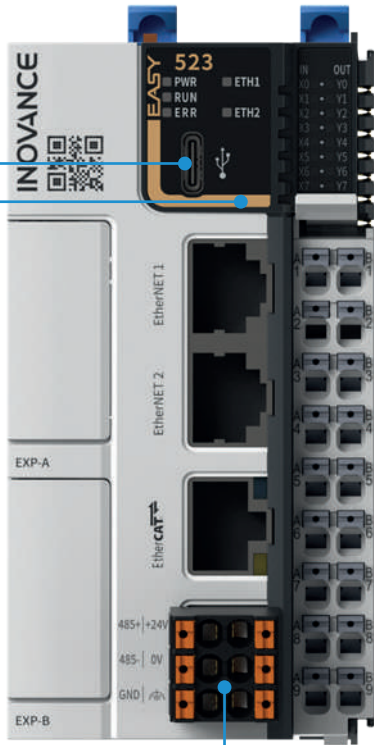
EtherCAT®

- ✓ Min. cycle time of 125 microseconds
- ✓ Allows EtherCAT alias configuration
- ✓ USB-C port for firmware upgrade

| Specification                    | Description  |
|----------------------------------|--|
| Dimensions (WxHxD:mm)            | 24×100×83  |
| Max. number of expansion modules | 16   |
| Protection                       | Over current/ reverse connection protection  |
| Operating ambient temperature    | -20~55°C   |
| Operating ambient humidity       | Less than 95% and no condensation  |
| IP rating                        | IP20   |
| Power supply                     | +24 VDC  |
| Process data                     | Up to 1,024 input bytes and 1,024 output bytes   |
| Mailbox size                     | Up to 256 input bytes and 256 output bytes   |
| Alias                            | It admits the configuration of EtherCAT aliases through the master. Expansion modules connected behind ECT do not support alias access and configuration. Range: 1~65535 |
| EtherCAT cycle                   | Min. cycle time of 125 microseconds  |
| EtherCAT port                    | 2 x RJ45   |
| Communication rate               | 100 M, full duplex   |
| Transmission distance            | 100 meters   |
| Firmware update port             | USB-C port for firmware upgrade  |

# Expansion capability

## GL20 expansion modules



Main CPU

EtherCAT coupler

24VDC power supply  
2 channels (A&B)

Wiring diagram

Type C port for firmware upgrade



I/O LED indicator

Label for each  
connection  
terminal

Digital outputs module

Analog outputs module

Digital inputs module

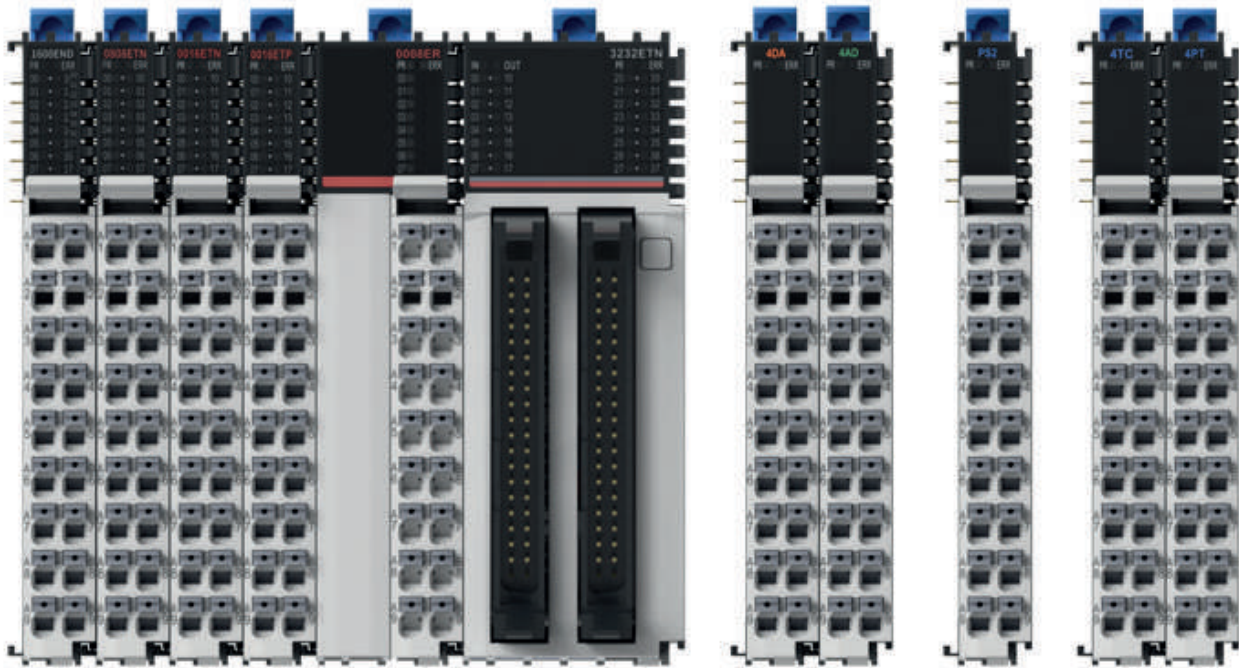
Analog inputs module

Communication module

Others



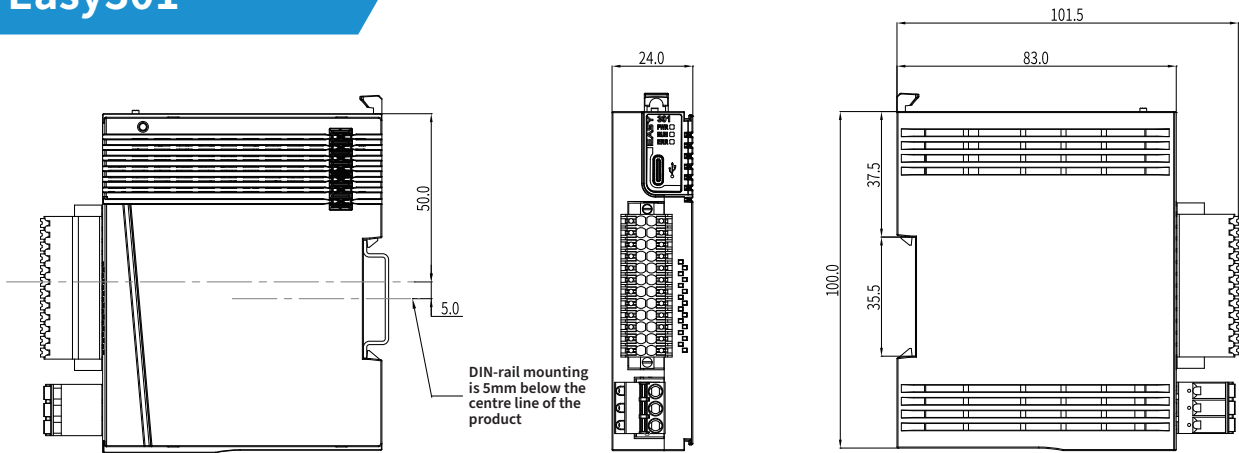
Please note: the colour codes  
specify the module type



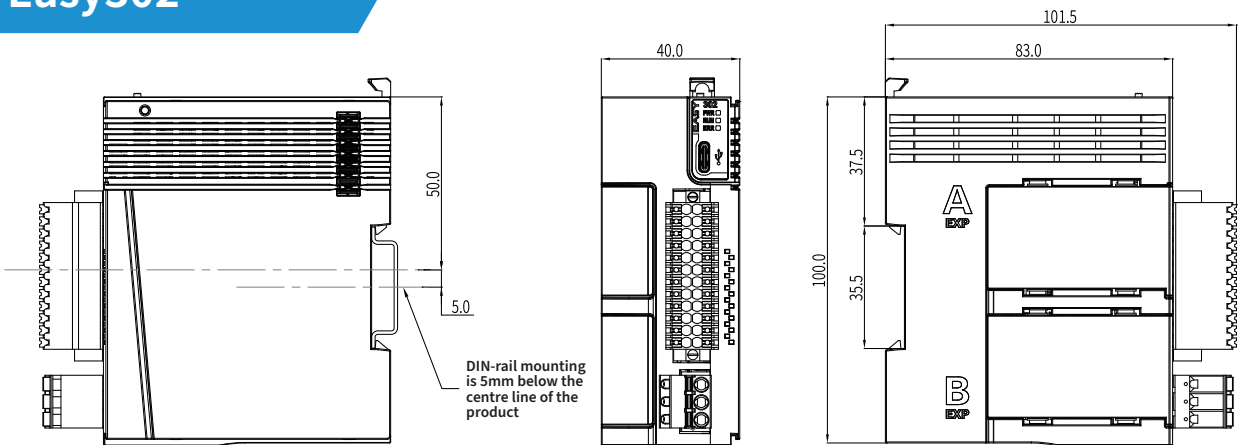
| Type of module        | Model               | Product code | Description  |
|-----------------------|---------------------|--------------|--|
| Bus coupler           | GL20-RTU-ECT        | 1440286      | EtherCAT slave bus coupler. Up to 16 expansion modules can be added  |
|                       | GL20-RTU-PN         | 1440289      | PROFINET slave bus coupler. Up to 16 expansion modules can be added  |
| Digital inputs        | GL20-1600END        | 1440291      | 16 x source (PNP)/sink (NPN) digital inputs module. Input filter from 0.25 ms to 32 ms   |
|                       | GL20-0800END        | 1440381      | 8 x source (PNP)/sink (NPN) digital inputs module. Input filter from 0.25 ms to 32 ms  |
|                       | GL20-3200END-M      | 1440378      | 32 x source (PNP)/sink (NPN) digital inputs module. Input filter from 0.25 ms to 32 ms   |
| Digital outputs       | GL20-0008ETP        | 1440380      | 8 x source (PNP) transistor outputs module. Response time 100 $\mu$ s  |
|                       | GL20-0008ETN        | 1440379      | 8 x sink (NPN) transistor outputs module. Response time 100 $\mu$ s  |
|                       | GL20-0016ETP        | 1440292      | 16 x source (PNP) transistor outputs module. Response time 100 $\mu$ s   |
|                       | GL20-0016ETN        | 1440293      | 16 x sink (NPN) transistor outputs module. Response time 100 $\mu$ s   |
|                       | GL20-0032ETN-M      | 1440377      | 32 x sink (NPN) transistor outputs module. Response time 100 $\mu$ s   |
| Relay outputs         | GL20-0008ER         | 1440334      | 8 x relay outputs module. Response time 15 ms  |
| Digital I/Os          | GL20-0808ETN        | 1440339      | 8 x source (PNP)/sink (NPN) digital inputs and 8 x sink (NPN) transistor outputs module. Response time 100 $\mu$ s. Input filter from 0.25 ms to 32 ms   |
|                       | GL20-3232ETN-M      | 1440290      | 32 x source (PNP)/sink (NPN) digital inputs and 32 x sink (NPN) transistor outputs module. Response time 100 $\mu$ s. Input filter from 0.25 ms to 32 ms |
| Analog inputs         | GL20-4AD            | 1440288      | 4 x analog inputs module (resolution 16 bits, sampling time 250 $\mu$ s)   |
| Analog outputs        | GL20-4DA            | 1440287      | 4 x analog outputs module (resolution 16 bits, sampling time 250 $\mu$ s)  |
| Temperature detection | GL20-4PT            | 1440337      | 4 x channel thermal resistance inputs temperature detection module (Pt100, Pt500, Pt1000, Cu100, KTY84, NTC5K, NTC10K)                                   |
|                       | GL20-4TC            | 1440338      | 4 x channel thermocouple inputs temperature detection module (thermocouple type: B,E,N,J,K,R,S,T)  |
| Accessories           | XA3210A-40-L0.5M-01 | 15310167     | I/O extension cable - 0.5 m length with 2 FCN connectors (required for GL20-3200END/GL20-0032ETN-M/GL20-3232ETN)   |
|                       | XA3210A-40-L2M-01   | 15310166     | I/O extension cable - 2 m length with 2 FCN connectors (required for GL20-3200END/GL20-0032ETN-M/GL20-3232ETN)   |
|                       | T024-K              | 15020452     | 40PIN MIL screw terminal block (Required for GL20-3200END/GL20-0032ETN-M/GL20-3232ETN)   |

# Dimensions

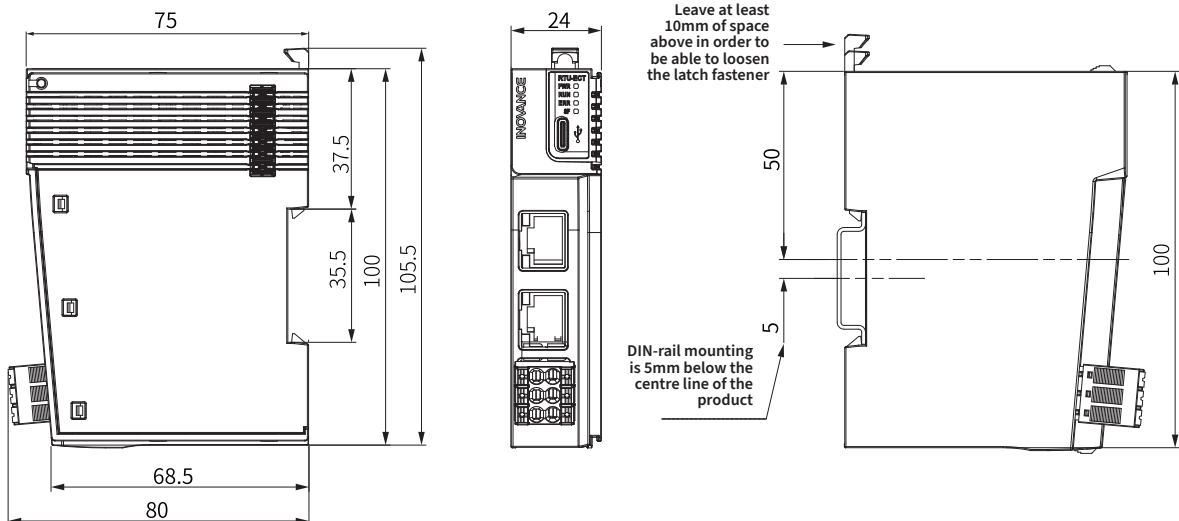
## Easy301



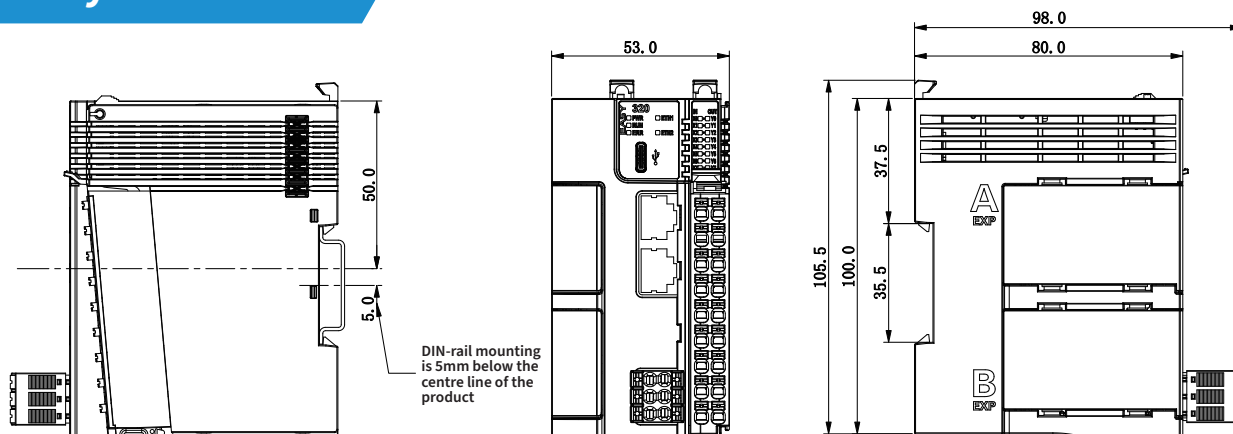
## Easy302



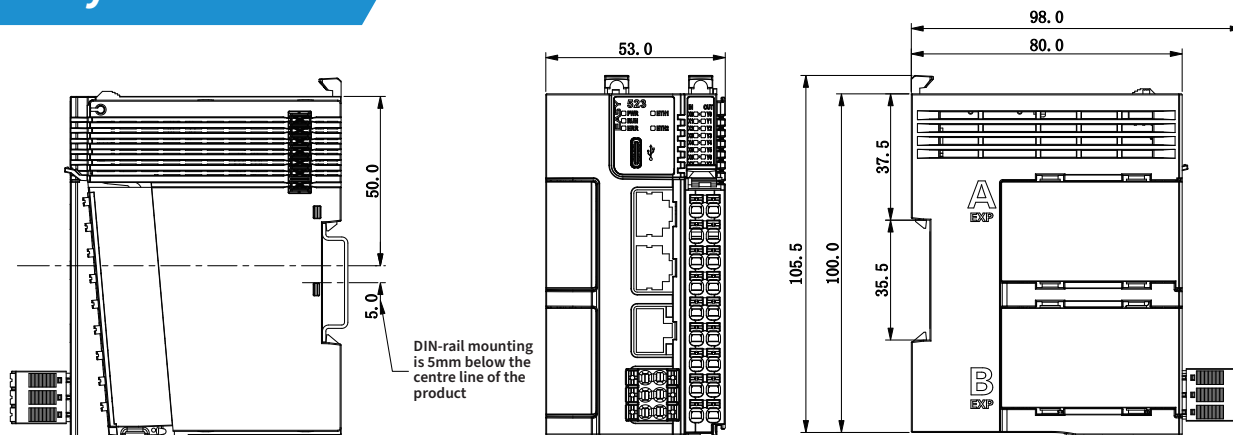
## GL20-RTU-ECT



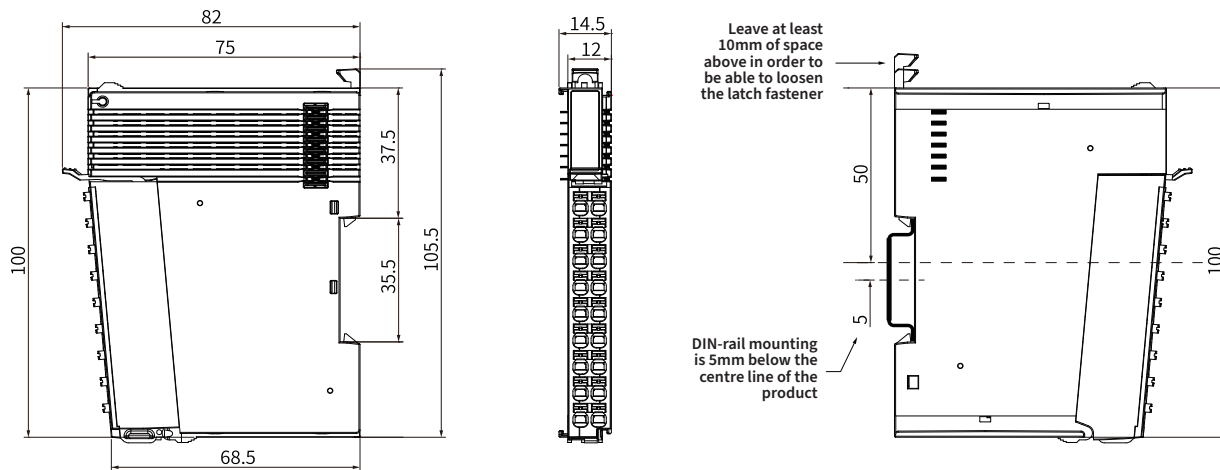
## Easy320



## Easy502 & 523



## GL20-1600END, GL20-0800END, GL20-0008ETP, GL20-0016ETP, GL20-0016ETN, GL20-0808ETN, GL20-4AD, GL20-4DA, GL20-4PT, GL20-4TC



Please note: GL20-008ER, GL20-3200END, GL20-0032ETN-M, GL20-3232ETN are a larger size. Details are available in the separate GL20 brochure.

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