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GL20-4IOL Series
IO-Link Master Communication Module

Equipment Guide

Industrial Automation | New Energy Vehicle | Intelligent Elevator | Intelligent Robot | Digital Energy | Rail Transit

Data code PS00022356A00

Legal Information

Copyright

Trademarks

Disclaimer of Liability

Due to continuous updates and improvements of products and technologies, the content of this documentation may not fully match the actual products. In the event of any discrepancies, the actual products shall prevail.

The contents are subject to change without notice due to product upgrade.

Waste Disposal

The storage, use, and disposal of this product (including optional accessories) must comply with local laws and regulations.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel can identify the risks of the product/system and prevent possible dangers.

Proper Use of the Product

Proper transportation, storage, assembly, installation, commissioning, operation, and maintenance are required to ensure the safe operation of the product without any problems. The required ambient conditions must be met. All operations must follow the guidelines provided in this documentation.

Preface

Introduction

This guide includes the product overview, model and nameplate, components, terminal wiring, as well as technical and environmental specifications of the module.

Target audience

This guide is primarily intended for the following engineers:

- Business development/Service engineers of Inovance
- Chief technical engineers of channel partners/end users
- Mechanical engineers of channel partners/end users
- Electrical engineers of channel partners/end users
- Software engineers of channel partners/end users
- Maintenance/Service engineers of channel partners/end users

Documentation guide

The product documentation package is organized into equipment guide and system guide, enabling you to quickly access the information as needed.

- Equipment guide: Contains a brief description of module properties, including model, components, technical specifications, and terminal wiring diagrams.
- System guide: Covers all typical application scenarios of the system, encompassing system introduction, installation, wiring, configuration and commissioning, troubleshooting, and maintenance.

Standard

The following table lists the certifications, directives, and standards that the product may comply with. For details about the acquired certificates, see the certification marks on the product nameplate.

Certification	Directive		Standard
CE certification	EMC directive	2014/30/EU	**24 VDC products:** EN 61131-2 **220 VAC products:** EN 61131-2 EN 61000-3-2 EN 61000-3-3
	LVD directive	2014/35/EU	EN 61010-1 EN 61010-2-201
	RoHS directive	2011/65/EU amended by (EU) 2015/863	EN IEC 63000
UL/cUL certification	-		UL 61010-1 UL 61010-2-201 CAN/CSA-C22.2 No. 61010-1 CSA C22.2 NO. 61010-2-201

Certification	Directive		Standard
KCC certification	-		-
EAC certification	-		-
UKCA certification	Safety regulations	Electrical Equipment (Safety) Regulations 2016	EN 61010-1 EN 61010-2-201
	EMC regulations	Electromagnetic Compatibility Regulations 2016	**24 VDC products:** EN 61131-2 **220 VAC products:** EN 61131-2 EN 61000-3-2 EN 61000-3-3
	RoHS regulations	Directive (RoHS) Regulations 2012	EN IEC 63000

More documents

Document	Code	Description
GL20 Series Module System Guide	PS00022010	Introduces all typical application scenarios of the system, providing detailed descriptions of system configuration, installation, wiring, commissioning, and troubleshooting.
GL20-4IOL Series IO-Link Master Communication Module Equipment Guide (This guide)	PS00022356	Introduces the product overview, model and nameplate, components, terminal wiring, as well as technical and environmental specifications of the module.

Revision history

Date	Version	Revision
April 2026	A00	Initial release.

Access to the guide

This guide is not delivered with the product. You can obtain the PDF version in the following ways:

- Visit https://www.inovance.com/global, choose Service&Support > Support > Documentation Download.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install My Inovance app, where you can search for and download the guide.

Warranty

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is caused by proper operation of the user. Maintenance will be charged after the warranty expires.

Even within the warranty period, maintenance will be charged for the following product damage:

- Damage caused by operations not following the instructions in the guide
- Damage caused by fire, flood, or abnormal voltage
- Damage caused by using the product for unintended functions
- Damage caused by using the product outside the specified scope
- Secondary damage caused by force majeure (natural disaster, earthquake, lightning strike)

When applicable, relevant maintenance fee will be charged according to the latest Price List of Inovance. If otherwise agreed upon, the agreed terms and conditions shall prevail.

For details, see the Warranty Card.

1 Fundamental Safety Instructions

1.1 Industrial Information Security

The product provides interfaces for network connection and data transmission. To protect factories, systems, machines, and networks from cyber attacks, it is essential to implement proper protection mechanism for industrial security.

Customers are responsible for providing and maintaining a secure connection between the product and their network or any other network to protect their factories, systems, machines, and networks from unauthorized access. Such systems or machines can be connected to an enterprise network or the Internet only when a secure connection is established and appropriate security measures (such as using antivirus software or installing firewalls) are in place.

Inovance continuously develops and improves products and solutions to enhance safety. It is strongly recommended that you update the product promptly and always use the latest version.

Tampering with software (such as viruses, Trojans, and Worms) can lead to unsafe drivestate, which can put the device in an unsafe operation state. This may result in death,serious injury, and property damage. Observe the following strictly.

- Always use the latest software version. If the product version is no longersupported or the latest version of the program is not applied, customers are atincreased risk of cyber-attacks.
- Take proper protection measures (including but not limited to deploying antivirussoftware, firewall, WAF, IPS/IDS, situational awareness system, IDverification, and data encryption) to prevent files in the mobile storage devicefrom being damaged by malware and protect products, networks, systems, andinterfaces from unauthorized access, disturbance, intrusion, data disclosure, orinformation theft.
- Check all safety-related interfaces and settings after commissioning.

1.2 General Safety Instructions

Safety Disclaimer

1. Read through the safety instructions before installing, operating, and servicing the equipment, and comply with these instructions.
2. To ensure personal and equipment safety, observe the notes indicated on the product labels and all the safety instructions in the user guide.
3. The "CAUTION", "WARNING", and "DANGER" are only supplements to the safety instructions.
4. Use this product according to the designated environment requirements. Damage caused by improper use is not covered by warranty.
5. Inovance shall take no responsibility for any personal injury or property damage caused by improper use.

Safety Levels and Definitions

DANGER	The "DANGER" sign indicates that failure to comply with the notice will result in severe personal injuries or even death.
WARNING	The "WARNING" sign indicates that failure to comply with the notice may result in severe personal injuries or even death.
CAUTION	The "CAUTION" sign indicates that failure to comply with the notice may result in minor or moderate personal injury or equipment damage.

Unpacking
WARNING . Do not install the product in the case of any damage, rust, or signs of use on the product or accessories upon unpacking. . Do not install the product in the case of water seepage into the product or missing or damaged components upon unpacking. . Do not install the product in the case of any discrepancy between the product you received and the product name on the packing list.
CAUTION . Check whether the packing is intact and whether there is damage, water seepage, dampness, and deformation before unpacking. . Unpack the package by following the unpacking sequence. Do not strike the package violently. . Check for damage, rust, or scratches on the surfaces of the product and accessories upon unpacking. . Check whether the package contents are consistent with the packing list after unpacking.

Storage and Transportation
WARNING . Large-scale or heavy equipment must be transported by qualified professionals using specialized hoisting equipment. Failure to comply may result in personal injury or equipment damage. . Before hoisting the equipment, ensure that components such as the front cover and terminal blocks are secured firmly with screws. Loosely-connected components may fall off and result in personal injury or equipment damage. . Never stand or stay below the product which is being hoisted. . Hoist the equipment at a constant speed with a steel rope to prevent any vibration or shock to the equipment. Never turn the equipment over or keep it suspended for a long time. Failure to comply may result in personal injury or equipment damage.
CAUTION . Handle the equipment with care and mind your steps during transportation to prevent personal injury or equipment damage. . When carrying the equipment with bare hands, hold the enclosure firmly with care to prevent parts from falling. Failure to comply may result in personal injury. . Store and transport the equipment based on the storage and transportation requirements. Failure to comply may result in equipment damage. . Do not store or transport the equipment in equipment exposed to splashing water or rain, direct sunlight, strong electric field, strong magnetic field, or strong vibration. . Do not store the equipment for more than three months. Long-term storage requires stricter protection and necessary inspections. . Pack the equipment securely and properly before transportation. Use a sealed container for long-distance transportation. . Do not transport the equipment with other devices or materials that may harm or have negative impacts on the equipment.

Design

DANGER

- Design a safety circuit and add an error handling program in the software to ensure the product remains in a safe state upon external power failure or product faults.
- Add an external safety device such as a fuse or circuit breaker because the equipment may smoke or burn due to long-time overcurrent caused by a rating error or short-circuited load.

WARNING

- When an output unit such as a relay or transistor in the equipment is damaged, the output may become uncontrollable and remain ON or OFF for a long period.
- The equipment design must comply with the overvoltage category requirements specified in the environmental specifications. The power supply must have a system-level lightning protection device, assuring that overvoltage due to lightning shock cannot be applied to the power supply input terminals, signal input terminals, or output terminals, to prevent equipment damage.
- Make sure that proper measures have been taken to avoid malfunction caused by the communication faults between the equipment and related devices, preventing personal injury or equipment damage.

CAUTION

Do not create, on the touch screen of the HMI, switches that may result in personal injury of the operator or equipment damage. Use independent switches for performing critical operations. Failure to comply may result in accidents caused by wrong outputs or faults.

Installation

DANGER

The equipment must be operated only by professionals with electrical knowledge. Non-professionals are not allowed.

WARNING

- Read through the guide and safety instructions before installation.
- Do not install this product in places with strong electric or magnetic field.
- Before installation, ensure that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply will result in mechanical hazards.
- Before installation, ensure that the installation environment meets the specifications. Failure to comply will result in product damage.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- Before installing the equipment in an enclosed environment (such as a cabinet or case), use a cooling device (such as a fan or air conditioner) to cool the environment to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit the equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- The equipment shall be installed in a cabinet or terminal device. Protection measures such as a fireproofing shell, electric protection shell, or mechanical protection shell must be provided for the cabinet or terminal device. The IP level must meet IEC standards and local laws and regulations.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the equipment onto an incombustible object such as a metal. Keep the equipment away from combustible objects. Failure to comply may result in a fire.
- For any equipment not supporting hot swapping, disconnect all external power supplies of the system before installing/disassembling the equipment. Failure to comply may result in an electric shock or equipment fault or malfunction.

Installation

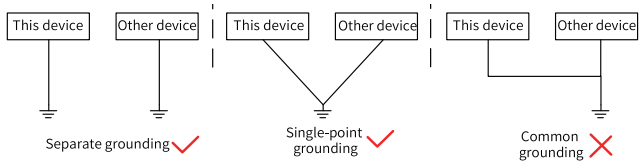
CAUTION

- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After installation, remove the covering to prevent it from blocking the vent, which may affect the heat dissipation and cause the equipment to overheat.
- During installation, ensure the equipment is connected to the respective connector securely and hook the equipment firmly. Improper installation may result in malfunction, fault, or fall-off.

Wiring

DANGER

- The equipment must be operated only by professionals with electrical knowledge. Non-professionals are not allowed.
- Before wiring, switch off all the power supplies of the equipment. Wait for at least the time designated on the equipment warning label before further operations because residual voltage still exists after power-off. Measure the DC voltage of the main circuit and make sure that it is below the safety voltage. Failure to comply may result in an electric shock.
- Do not perform wiring, remove the equipment cover, or touch the PCB with power on. Failure to comply may result in electric shock.
- Make sure that the equipment is grounded properly. Failure to comply may result in an electric shock. Separate grounding or single-point grounding, other than common grounding, is recommended.



- Insulate the cable terminals properly to ensure the insulation distance between cables will not be shortened after cables are connected to the terminal block. Failure to comply may result in an electric shock or equipment damage.
- Install the terminal cover attached to the equipment before power-on or operation after wiring is done. Failure to comply may result in an electric shock.

WARNING

- Do not connect the power cable to output terminals of the equipment or product. Failure to comply may cause equipment damage or even a fire.
- Cables must meet size and shield requirements. The shield must be reliably grounded at one end.
- Fix the terminal screws with the tightening torque specified in the guide. Improper tightening torque may cause the connecting part over-temperature or damage, resulting in a fire.
- After wiring is done, check that all cables are connected properly and no screws, washers or exposed cables are left inside the equipment. Failure to comply may result in electric shock or equipment damage.

CAUTION

- Follow the proper electrostatic discharge (ESD) procedure and wear an anti-static wrist strap to perform wiring. Failure to comply may result in damage to the equipment or to the internal circuit of the product.
- Use shielded twisted pairs for the control circuit. Connect the shield to the grounding terminal of the equipment for grounding purpose. Failure to comply will result in equipment malfunction.

Power-on
DANGER • The equipment must be operated only by professionals with electrical knowledge. Non-professionals are not allowed. • Before power-on, check that the equipment is installed and wired properly. • Before power-on, make sure that the power supply meets equipment requirements to prevent equipment damage or even a fire. • Do not open the cabinet door or protective cover of the equipment, touch any terminal of the equipment, or remove any part of the equipment with power-on. Failure to comply may result in death or personal injury.
WARNING Perform a trial run after wiring to ensure that the equipment operates safely. Failure to comply may result in personal injury or equipment damage.

Operation
DANGER • The equipment must be operated only by professionals. Failure to comply can result in death or personal injury. • Do not touch any connecting terminals or disassemble any unit or component of the equipment during operation. Failure to comply may result in an electric shock.
WARNING • Do not touch the enclosure, fan, or resistor with bare hands. Failure to comply may result in burns. • Prevent metal or other objects from falling into the equipment during operation. Failure to comply may result in a fire or equipment damage. • During operation, do not bring live parts into contact with the metal enclosure of the product. Failure to comply may result in a fire or equipment damage.
CAUTION • Operate the equipment under the required environmental conditions. Failure to comply may result in equipment fault or damage. • Touch the HMI panel with hands only during operation. Inovance assumes no responsibility for panel damage caused by excessive external force.
Safety recommendations • In positions where the operator directly touches the mechanical parts, for example, where a mechanical device is loaded/unloaded, or where a machine runs automatically, manually-operated devices or other alternative means must be carefully designed so that they are independent of the equipment to start or stop the automatic operation of the system. • If you need to modify the program while the system is running, use the lock function or other protection measures to ensure that only authorized personnel can make the necessary modifications.

Battery Usage

WARNING

- Do not use batteries that do not meet the equipment requirements. Failure to comply may result in death, personal injury, explosion, or a fire.
- Do not throw batteries into a fire or heat oven. Do not crush or cut batteries. Failure to comply may result in death, personal injury, explosion, or a fire.
- Do not expose batteries to extremely high temperatures. Failure to comply may result in death, personal injury, explosion, or a fire.
- Do not swallow batteries. Failure to comply may result in chemical burns.
- If a button battery is swallowed by accident, seek medical treatment immediately. Failure to comply may result in severe internal burns within two hours, which may cause death.

CAUTION

- Keep the batteries away from children.
- If the battery compartment is not shut tight, stop using the product and keep it away from children.

Maintenance

DANGER

- Maintenance must be carried out by professionals who have received electrical trainings and have sufficient electrical knowledge.
- Do not maintain the equipment with power-on. Failure to comply may result in an electric shock.
- Before maintenance, disconnect all the power supplies of the equipment and wait for at least the time specified on the warning label.
- Disconnect all external power supplies of the system before cleaning the equipment or re-tightening screws on the terminal block or screws for connector installation. Failure to comply may result in an electric shock.
- Disconnect all external power supplies of the system before removing the equipment or connecting/removing wiring. Failure to comply may result in an electric shock or malfunction.

WARNING

Perform routine and periodic inspection and maintenance on the equipment according to maintenance requirements and keep a maintenance record.

Repair

DANGER

- Repair must be carried out by professionals who have received the electrical trainings and have sufficient electrical knowledge.
- Do not repair the equipment with power-on. Failure to comply may result in electric shock.
- Before inspection or repair, disconnect all the power supplies of the equipment and wait for at least the time specified on the warning label.

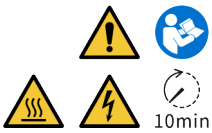
WARNING

- Submit the repair request according to the warranty agreement.
- When the fuse is blown or the circuit breaker or earth leakage circuit breaker (ELCB) trips, wait as specified on the product warning sign before power-on or further operations. Failure to comply may result in personal injuries, equipment damage or even death.
- When the equipment is faulty or damaged, require professionals to perform troubleshooting and repair by following repair instructions and keep a repair record.
- Replace quick-wear parts of the product in accordance with the replacement instructions.
- Do not operate the damaged equipment. Failure to comply may result in death, personal injury, or severe equipment damage.
- Recheck the wiring and reset the parameters after equipment replacement.

Disposal
WARNING • Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in death, personal injury, or property damage. • Recycle retired equipment in accordance with industry waste disposal standards to avoid environmental pollution. • Treat the scrapped equipment as industrial waste. Dispose of the batteries according to local laws and regulations.

Safety Labels

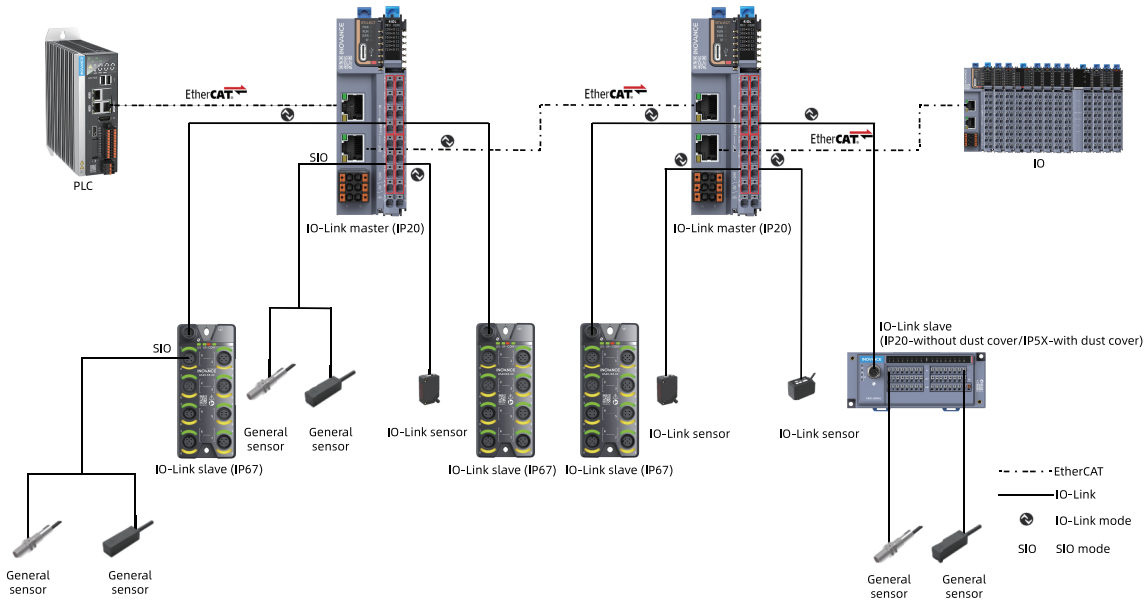
To ensure safe operation, comply with safety labels on the equipment and do not damage or remove the labels. The following table describes the meaning of the safety labels.

Safety labels	Description
	• Before using the equipment, read the guide and safety precautions carefully. Failure to comply may result in personal injury, death, or equipment damage. • Do not touch the terminals or remove the cover with power-on or within 10 min after power-off. Failure to comply may result in an electric shock. • The surface of the product may become very hot during operation. Do not touch these hot areas, as this may cause burns!

2 Product Introduction

GL20-4IOL is a 4-channel IO-Link master communication module. It is compatible with Inovance AC800, Beckhoff, and Omron PLCs, and supports the following functions.

- Supports four IO-Link ports, and can connect up to four IO-Link devices (Class A type); supports communication rates of COM1 (4.8 kbps), COM2 (38.4 kbps), and COM3 (230.4 kbps).
- Supports SIO mode for C/Q signals.
- Supplies external US power, with a maximum output of 2 A (24 V) per channel; supports short-circuit and overcurrent detection and protection.



Note

For configuration and commissioning examples, see the "Configuration and Commissioning > GL20-RTU-ECT32" section in the GL20 Series System Guide.

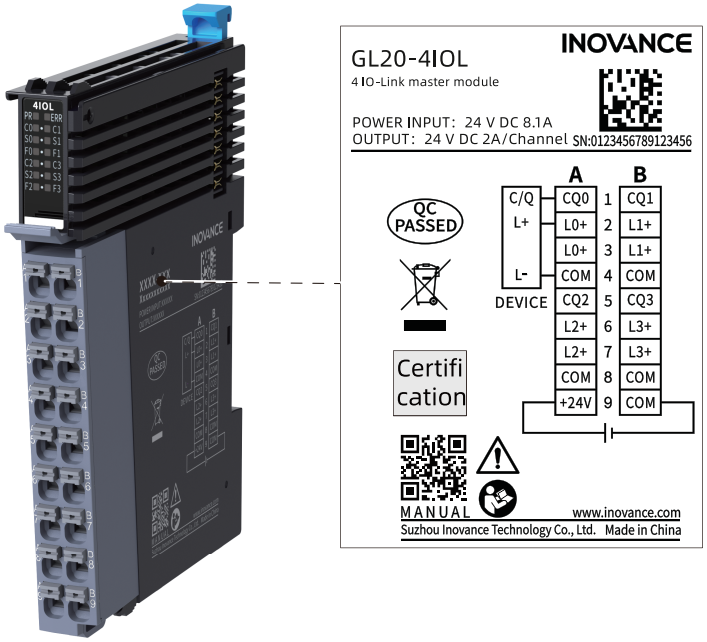
3 Model and Nameplate

Model

GL 20-4 IOL
① ② ③ ④

① **Product information** GL: General local module	③ **Number of I/O Channels** 4: 4 channels
② **Series** 20: 20 series module	④ **Module Type** IOL: IO-Link

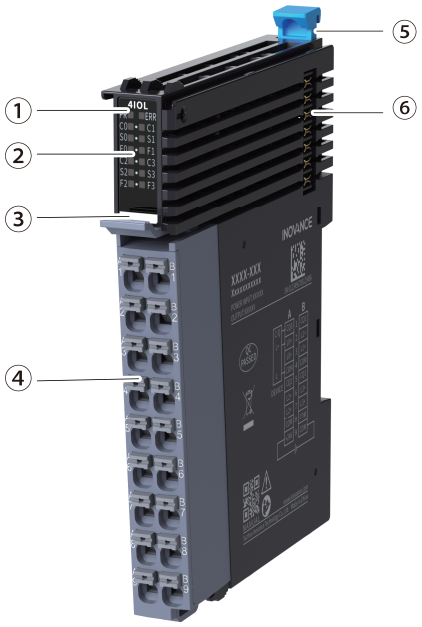
Nameplate



Based on the above model and nameplate information, relevant ordering information of the product is provided in the following table.

Model	Description	Product Code	Applicable Model
GL20-4IOL	GL20 series 4-channel IO-Link master communication module	01441102	Compatible with GL20 series communication interface modules (such as GL20-RTU-ECT32) and IO-Link slave modules (such as GS20 slave).

4 Components



No.	Name	Description			
①	Signal indicator	PR (POWER+RUN)	Power/Operation indicator	Yellow-green	• Solid on: The module is in normal operation. • Fast flashing: The module is addressed successfully. • Slow flashing: The module is powered on but not addressed. • OFF: The module is not powered on or is faulty.
		ERR	State machine fault indicator	Red	Module fault or 24 V field power failure
②	Operation indicator	C0 to C3	IO-Link communication indicator	Yellow-green	• Solid on: Communication is normal in IO-Link mode. • Flashing: Communication is abnormal in IO-Link mode (flashing alternatively with the red state machine fault indicator, indicating IO-Link verification failure). • Off: Port is disabled or is in SIO mode.
		S0 to S3	Port mode indicator	Yellow-green	• Solid on: Port is in SIO mode with valid DI/DO signal on C/Q pin. • Off: Port is disabled, not in SIO mode, or it is in SIO mode but with no valid DI/DO signal.
		F0 to F3	Port fault indicator	Red	• Solid on: There is an overcurrent or short on the L+ pin in IO-Link mode, or the DO output is shorted in SIO mode. • Flashing: Flashing alternatively with the green IO-Link communication indicator, indicating IO-Link verification failure. • Off: No fault on the corresponding port.
③	Color identification		Red: Digital output		Orange: Analog output
			Gray: Digital input		Green: Analog input
			White: Communication		Blue: Other modules
④	Push-in terminal block	Pluggable terminal block with spring clamp wiring. The terminal block features "AB" silkscreen marking. For detailed definitions, see *"5.1 Terminal Assignment" on page 17*			

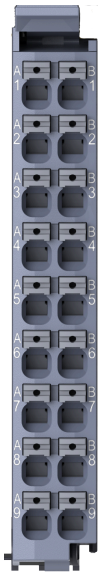
No.	Name	Description
⑤	Rail mounting latch	Used to secure the module to the DIN rail.
⑥	Three-position terminal block	Used for backplane bus power supply and communication.

Note

- Fast flashing: The indicator is on for 200 ms and off for 200 ms, repeating this cycle.
- Slow flashing: The indicator is on for 200 ms and off for 1s, repeating this cycle.

5 Terminal Wiring

5.1 Terminal Assignment



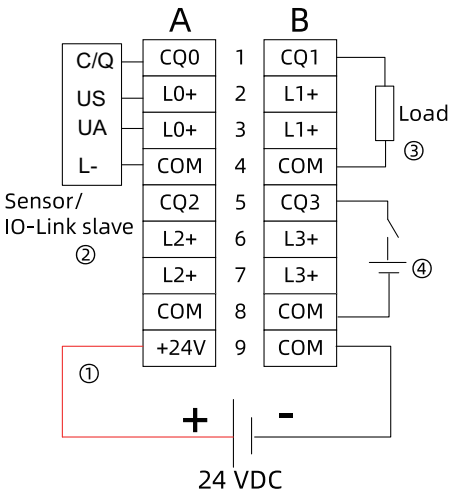
Signal (Left)	Terminal (Left)	Terminal (Right)	Signal (Right)
CQ0	A1	B1	CQ1
L0+	A2	B2	L1+
L0+	A3	B3	L1+
COM	A4	B4	COM
CQ2	A5	B5	CQ3
L2+	A6	B6	L3+
L2+	A7	B7	L3+
COM	A8	B8	COM
24 V	A9	B9	COM

5.2 Wiring Diagram

Wiring precautions

- Do not bundle the extension cables with power cables (high voltage and high current) that produce strong interference signals, as this may increase noise, surges, and induction effects. Separate the extension cables from the power cables and avoid cabling in parallel.
- Use the recommended cables and adapter boards for connection. It is recommended that shielded cables be used as extension cables to enhance anti-interference capacity.
- Apply single-point grounding for the shield of shielded cables and soldered cables.

Wiring Diagram



No.	Description
①	A9 and B9 are terminals for power supply wiring.
②	A1 to A4 are terminals for IO-Link communication wiring.
③	B1 to B4 are terminals for DO output communication wiring.
④	B5 to B8 are terminals for DI input communication wiring.

6 Technical Specifications

Mechanical specifications

Item	Description
IP rating	IP20
Dimensions (W × H × D)	12 mm × 100 mm × 75 mm
Weight	Approx. 64 g

Power supply specifications

Item	Description
System-side power supply voltage	5 VDC
System-side power supply current	Module operating current cannot exceed 125 mA.
Field-side power supply voltage	24 VDC (20.4 VDC to 28.8 VDC)
(Rated) Field-side power supply current	8.1 A
Rated voltage of the 24 V output power supply (L+/US)	24 VDC (20.4 VDC to 28.8 VDC)
Maximum current of the 24 V output power supply (L+/US)	Rated current: 1.6 A/channel, 6.8 A/module Overcurrent protection typical value: 2 A/channel Note: Upon power-on, the maximum capacitive load for this power output is 1000 μF.
Reverse polarity protection for the 24 V output power supply (L+/US)	Supported
Module heat loss (for 24 V power supply and system-side 5 V power supply)	< 1.4 W @ 55°C

Input specifications

Item	Description
Input type	Digital input
Input mode	Source type (PNP)
Input voltage class	24 VDC (20.4 VDC to 28.8 VDC)
Input current (typical)	4 mA (typical@24 V)
ON-state voltage	> 11 VDC (Type 3)
OFF voltage	< 5 VDC

Output specifications

Item	Description
Output type	Digital output, transistor output
Output mode	Source type (PNP)
Output voltage class	24 VDC (20.4 VDC to 28.8 VDC)
Output load (resistive load)	0.5 A/point, Max. 1 A in total
Output load (inductive load)	7.2 W/channel; 12 W/module Note: Stopping inductive loads generates a large back EMF, which lasts for a time shorter than the configured switch-off cycle.

Item	Description
Output load (lamp load)	5 W/channel; 9 W/module Note: Lamp loads generate inrush current up to 10 to 15 times the normal current when turned on. This module safely drives loads with inrush current up to 10 A for ≤ 300 µs.
Hardware response time (ON/OFF)	100 µs/100 µs
OFF-state leakage current	< 250 µA
Switching frequency in SIO mode	Resistive load: 100 Hz; inductive load: 5 Hz; lamp load: 10 Hz
Output derating	**Horizontal mounting** • When operating at 55°C, the total 24 V (L+) output current is derated to a maximum of 4 A. • When operating at 45°C, the 24 V (L+) output is non-derated, and the maximum output current is 6.8 A. • The maximum ambient temperature is 55°C. The DO output is non-derated with a maximum total current of 1 A (L+ without load). **Vertical mounting** • When the GL20-RTU-ECT32 communication interface module is mounted at the bottom: At 45°C, the total 24 V (L+) output current is non-derated with a maximum of 6.8 A. • When the GL20-RTU-ECT32 communication interface module is mounted at the top: At 38°C, the total 24 V (L+) output current is non-derated with a maximum of 6.8 A; at 45°C, the total 24 V (L+) output current is derated to a maximum of 4 A. • The maximum ambient temperature is 45°C. The DO output is non-derated with a maximum total current of 1 A (L+ without load).

Software specifications

Item	Description
Size of process data	The input process data is 183 bytes, and the output process data is 129 bytes.
Slot restriction	Only the first four slots are available.
Number of ports	4
IO-Link port type	Class A
IO-Link version	V1.1.3
IO-Link version verification	Supports V1.0 and V1.1 version verification.
Identification parameter acquisition	Identification parameters, such as Vendor ID, Product Name and Product ID, can be acquired.
C/Q pin mode	IO-Link, SIO (DI), SIO (DO)
Communication rate	COM1 (4.8 kbps), COM2 (38.4 kbps), COM3 (230.4 kbps)
Parameter backup and restoration	• Enabling backup and restoration of slave configuration data • Enabling only restoration of slave configuration data
Preset value output upon disconnection	Outputs 0, 1, or last value.
Output maintaining function upon disconnection	When the industrial Ethernet is disconnected, the DO ports can maintain the output according to the preset value.
Short circuit detection for C/Q pin output	When the C/Q pin is configured in SIO (DO) mode, it supports short circuit detection.
Short circuit detection for L+ pin	Supported

Item	Description
Firmware update	Supported
Maximum cable length	20 m
DO/DI function	Supports the SIO mode for C/Q signals.
Isolation	Isolated between field side and system side; not isolated between channels.
Voltage resistance of isolation	500 VDC between system side and field side for 1 minute at normal temperature and pressure.

7 Environmental Specifications

Item	Specification
Installation/Operating environment	Free from conductive dust, conductive fibers, explosive dust, flammable gases, water mist/greasy dirt, corrosive dusts/gases, strong vibration, and repetitive shock
Altitude	≤ 2000 m
Pollution degree	Level 2
Immunity	2 kV on power supply line (Conforms to IEC 61000-4-4)
Overvoltage category	I
EMC immunity level	Zone B, IEC61131-2
Anti-static rating	Contact discharge +/-6 kV and air discharge +/-8 kV
Vibration resistance	• Application scenario: Tested according to IEC60068-2-6. 3.5 mm amplitude at 5 Hz to 8.4 Hz; 1 g acceleration at 8.4 Hz to 200 Hz; 10 cycles per axis. • Transportation scenario: Tested according to IEC60068-2-64, 0.01 g^2/Hz power spectral density at 5 Hz to 100 Hz; 0.001 g2/Hz power spectral density at 200Hz; 1.14 g G_{rms}
Shock resistance	Application/Transportation scenario: Tested according to IEC60068-2-27; 15 g peak acceleration, 11 ms pulse width, 18 shocks in total in X, Y and Z axes
Operating temperature/ humidity	• Temperature: -20°C to +55°C • Humidity: < 95% RH (30°C), without condensation
Storage temperature/ humidity	• Temperature: -20°C to +60°C • Humidity: < 95% RH (30°C), without condensation
Transportation temperature/humidity	• Temperature: -40°C to +70°C • Humidity: < 95% RH (40°C), without condensation

8 Product Functions

8.1 IO-Link Device Parameter Setting and Reading

If the port is configured to IO-Link mode, read/write access to the parameters of the connected IO-Link device can only be performed when the local bus (GL-Link) is in the OP state. IO-Link device parameters are defined by relevant manufacturers, not by this module. For specific parameter addresses and their meanings, see the guide of the IO-Link equipment.

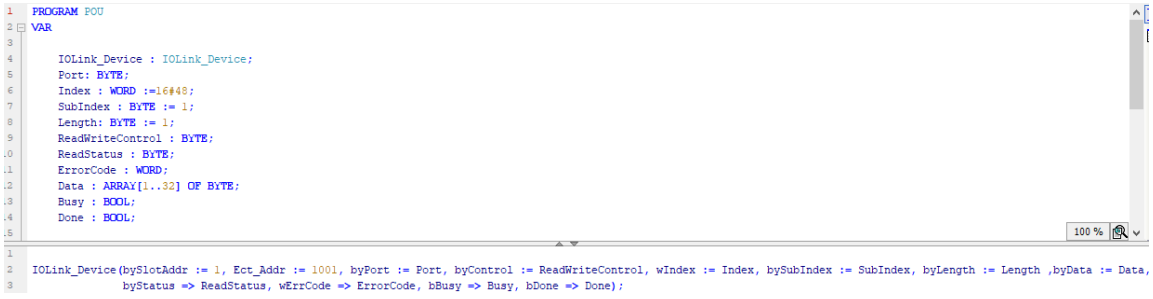
The GL20-4IOL module uses the IOLink_Device function block to set and read the parameters of the connected IO-Link device. The input/output pins of the function block are defined as follows.

```
FUNCTION_BLOCK IOLink_Device
VAR_INPUT
    Ect_Addr : UINT := 1001;
    bySlotAddr : BYTE;

    byPort : BYTE;
    byControl : BYTE;

    wIndex : WORD;
    bySubIndex : BYTE;
    byLength : BYTE;
END_VAR
VAR_OUTPUT
    byStatus : BYTE;
    wErrCode : WORD;
    bDone : BOOL;
    bBusy : BOOL;
END_VAR
VAR_IN_OUT
    byData : ARRAY[1..32] OF BYTE;
END_VAR
```

The following is an example of how to use the function block.



Note

For information about function blocks, contact Inovance technical support.

The fault codes defined in the function block are described as follows.

Fault Code	Description
0x4001	Unsupported operation
0x4003	Device not accessible
0x4004	Invalid operation
0x4005	Slave device not in running status

Fault Code	Description
0x4034	Length error
0x4036	Invalid operation due to busy master station
0x4039	Port not enabled

Note

In addition to the above fault codes, the following are related instructions and protocol fault codes.

- For faults related to EtherCAT slave SDO write and read instructions, see the descriptions for "ETC_CO_SdoWrite" and "ETC_CO_SdoRead" in the Medium-Sized PLC Instruction Guide.
- For faults related to the IO-Link protocol stack, see the IO-Link protocol specification.

8.2 IO-Link Device Identification Parameters

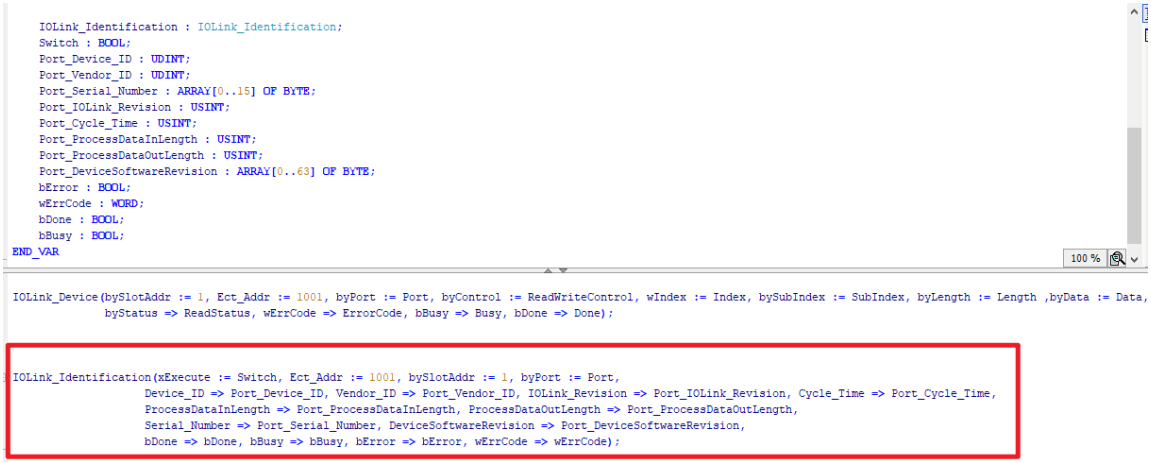
Index 0x900n can be used to verify whether the configuration index 0x800n of the IO-Link device connected to the port is configured correctly. If a fault occurs, the object index 0x900n is used to compare the IO-Link device configuration with the actual status. The function to obtain IO-Link device information is implemented by the function block IOLink_Identification, and the input/output pin definition of the function block is shown below.

```
FUNCTION_BLOCK IOLink_Identification
VAR_INPUT
    xExecute : BOOL;

    Ect_Addr : UINT := 1001;
    bySlotAddr : BYTE;
    byPort : BYTE;
END_VAR
VAR_OUTPUT
    bError : BOOL;
    wErrCode : WORD;
    bDone : BOOL;
    bBusy : BOOL;

    Device_ID : UDINT;
    Vendor_ID : UDINT;
    Serial_Number : ARRAY[0..15] OF BYTE;  //STRING(16)
    IOLink_Revision : USINT;
    Cycle_Time : USINT;
    ProcessDataInLength : USINT;
    ProcessDataOutLength : USINT;
    DeviceSoftwareRevision : ARRAY[0..63] OF BYTE;   //STRING(64)
END_VAR
```

The following is an example of how to use the function block.



```
    IOLink_Identification : IOLink_Identification;
    Switch : BOOL;
    Port_Device_ID : UDINT;
    Port_Vendor_ID : UDINT;
    Port_Serial_Number : ARRAY[0..15] OF BYTE;
    Port_IOLink_Revision : USINT;
    Port_Cycle_Time : USINT;
    Port_ProcessDataInLength : USINT;
    Port_ProcessDataOutLength : USINT;
    Port_DeviceSoftwareRevision : ARRAY[0..63] OF BYTE;
    bError : BOOL;
    wErrCode : WORD;
    bDone : BOOL;
    bBusy : BOOL;
END_VAR
```

```
IOLink_Device(bySlotAddr := 1, Ect_Addr := 1001, byPort := Port, byControl := ReadWriteControl, wIndex := Index, bySubIndex := SubIndex, byLength := Length ,byData := Data,
              byStatus => ReadStatus, wErrCode => ErrorCode, bBusy => Busy, bDone => Done);
```

```
IOLink_Identification(xExecute := Switch, Ect_Addr := 1001, bySlotAddr := 1, byPort := Port,
                      Device_ID => Port_Device_ID, Vendor_ID => Port_Vendor_ID, IOLink_Revision => Port_IOLink_Revision, Cycle_Time => Port_Cycle_Time,
                      ProcessDataInLength => Port_ProcessDataInLength, ProcessDataOutLength => Port_ProcessDataOutLength,
                      Serial_Number => Port_Serial_Number, DeviceSoftwareRevision => Port_DeviceSoftwareRevision,
                      bDone => bDone, bBusy => bBusy, bError => bError, wErrCode => wErrCode);
```

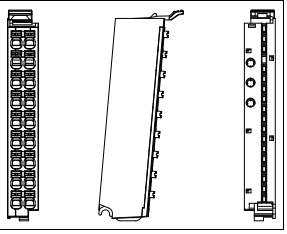
The fault codes defined in the function block are described as follows.

Fault Code	Description	**Cause**
0x4001	Unsupported operation	GL20-4IOL module address setting out of range (bySlotAddr > 4)
0x4003	Device not accessible	Port number setting out of range (byPort > 3)

Note

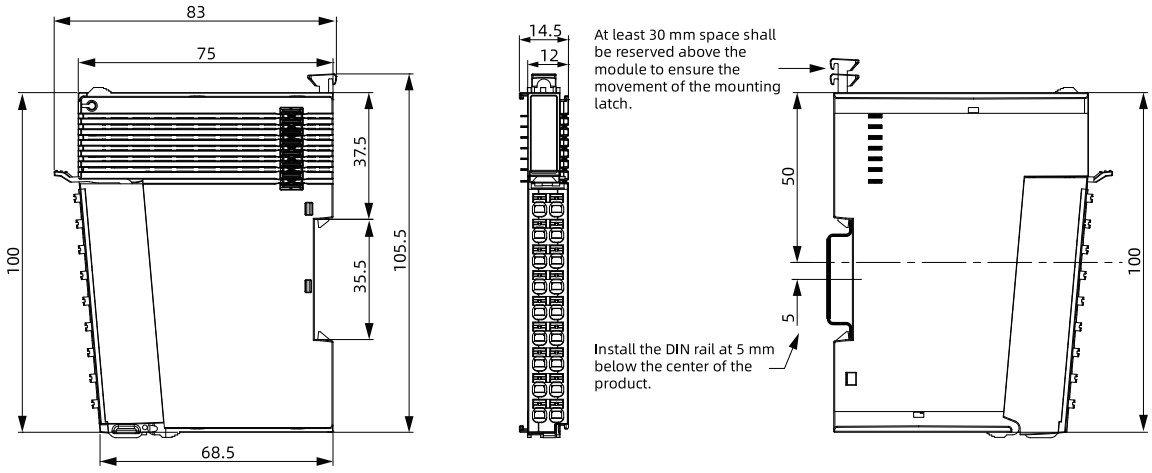
In addition to the above faults, for faults related to EtherCAT slave SDO write and read instructions, see the descriptions for "ETC_CO_SdoWrite" and "ETC_CO_SdoRead" in the Medium-Sized PLC Instruction Guide.

9 Spare Parts List

Name	Description	Product Code	Diagram
Push-in terminal block (marked as AB)	Pluggable terminal block with spring clamp wiring	15212635	

10 Dimension Drawing

The dimensions (in mm) are shown in the figure below.



Service and Support

Should you encounter a safety accident during the use or operation of the product, or face challenges in operating and maintaining the equipment, which remain unresolved after the relevant documentation is consulted, we provide multiple channels to ensure prompt resolution:

- Channel #1: Contact service@inovance.com.
- Channel #2: Visit https://www.inovance.com/global to access document downloads, after-sales support, spare parts ordering, repair applications, and authenticity verification services.
- Channel #3: Download My Inovance app (https://zshc-eu.inovance.com/download-pc/) where you can access products info and documentation, and query product parameters.

We are committed to providing you with quick and professional technical support, and we look forward to your satisfaction and trust.

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