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GL20-0008ER Digital Ouput Module

User Guide

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Preface

■ Introduction

GL20-0008ER series 8-channel digital relay output module can be used with Easy series products and GL20 series communication interface module such as GL20-RTU-ECT and GL20-RTU-PN.

This guide describes the mechanical installation, electrical installation, programming commissioning, troubleshooting and version matching information of the product.

■ 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
KCC Certification	-		-

Certification	Directive		Standard
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 Name	Document Coding	Description
GL20-RTU-ECT Communication Interface Module User Guide	PS00004985	This guide describes the installation, wiring and more of the product.
GL20-RTU-PN Communication Interface Module User Guide	PS00007594	This guide describes the installation, wiring and more of the product.

■ Revision History

Revision date	Version	Description
July, 2024	A06	Updated *"3.3 Terminal Wiring" on page 24*.
June 2024	A05	• Updated *"1.3 Technical Specifications" on page 12*. • Added the "Output PDO data volume" parameter to the software specifications in section *"1.3 Technical Specifications" on page 12*. • Updated the "switching frequency" to the output specifications in section *"1.3 Technical Specifications" on page 12*.
November 2023	A04	**Modification** • Updated the guide rail diagram in *"2.3 Installation Method" on page 18*. • Change the section title "Programming Example" to "Programming Commissioning " and adjust its placement to precede the "Fault Diagnosis" section. • Optimized the style of the figure arrows.
July 2023	A03	Added "Fault Diagnosis" and "Version Matching Information" sections. Add specifications for "Mechanical life" and "Electrical life."
January 2023	A02	Made minor corrections.

Revision date	Version	Description
December 2022	A01	Updated the structure drawing and nameplate drawing. Added "Environmental Specifications". Made minor corrections.
November 2022	A00	Initial release.

■ Access to the Guide

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

- Do keyword search under Service and Support at *www.inovance.com*.
- 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 user guides.

■ Warranty Disclaimer

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is not caused by improper operation of the user. Maintenance will be charged after the warranty expires.

Within the warranty period, maintenance will be charged for the following damage:

- Damage caused by operations not following the instructions in the user guide
- Damage caused by fire, flood, or unusual voltage
- Damage caused by unintended use of the product
- Damage caused by use beyond the specified scope of application of the product
- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

For details, see the Product Warranty Card.

Fundamental 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. “CAUTION”, “WARNING”, and “DANGER” in this guide only indicate some of the precautions that need to be followed; they just supplement the safety precautions.
4. Use this product in environments meeting the design and specification requirements; otherwise, a fault may occur. Noncompliance-caused malfunction or damage to parts are not covered in product quality warranty.
5. Inovance shall take no responsibility for any personal injury or property damage caused by improper use.

■ Safety Levels and Definitions

"DANGER" indicates that failure to comply with the notice will result in death or severe personal injuries.

"WARNING" indicates that failure to comply with the notice may result in death or severe personal injuries.

"CAUTION" indicates that failure to comply with the notice may result in minor or moderate personal injury or equipment damage. Keep this user guide properly for future use and deliver it to the end user.

Control System Design

- Provide a safety circuit outside the PLC so that the control system can still work safely once external power failure or controller fault occurs.
- Add a fuse or circuit breaker because the module may smoke or catch fire due to long-time overcurrent caused by operation above rated current or load short-circuit.

WARNING

- An emergency stop circuit, a protection circuit, a forward/reverse operation interlocked circuit, and an upper position limit and lower position limit interlocked circuit must be set in the external circuits of PLC to prevent damage to the machine.
- To ensure safe operation, for the output signals that may cause critical accidents, use external protection circuits and safety mechanism.
- Once PLC CPU detects abnormality in the system , all outputs may be closed; however, when a fault occurs in the controller circuit, the output may not be under control. Therefore, it is necessary to design an appropriate external control circuit to ensure normal operation.
- If the PLC output units such as relays or transistors are damaged, the output may fail to switch between ON and OFF states according to the commands.
- The PLC is designed to be used in an indoor electrical environment (overvoltage category II). The power supply must have a system-level surge protector, assuring that overvoltage due to lightning shock can't be applied to the PLC's power supply input terminals, signal input terminals and output terminals, to prevent damage to the equipment.

Installation

WARNING

- Installation must be carried out by skilled personnel who have undergone specialized electrical training and possess comprehensive electrical expertise.
- Disconnect all external power supplies of the system before removing/installing the module. Failure to do so may result in electric shock, module fault or malfunction.
- Do not use the PLC in environments with dust, greasy smoke, conductive dust, corrosive or combustible gases, exposed to high temperature, condensation, wind & rain, or subject to vibration and shock. Electric shock, fire and malfunction may also result in damage or deterioration to the product.
- The PLC is open-type equipment that must be installed in a control cabinet with lock (cabinet housing protection > IP20). Only the skilled personnel who have undergone specialized electrical training and possess comprehensive electrical expertise can open the cabinet.

CAUTION

- Prevent metal filings and wire ends from dropping into ventilation holes of the PLC during installation. Failure to comply may result in fire, fault and malfunction.
- Ensure there are no foreign matters on ventilation surface. Failure to comply may result in poor ventilation, which may cause fire, fault and malfunction.
- Ensure the module is connected to the respective connector securely and hook the module firmly. Improper installation may result in malfunction, fault or fall-off.

Wiring

- Wiring must be carried out by skilled personnel who have undergone specialized electrical training and possess comprehensive electrical expertise.
- Disconnect all external power supplies of the system before wiring. Failure to comply may result in electric shock, module fault or malfunction.
- 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 electric shock or damage to the equipment.

- To avoid electric shock, cut off the power supply before connecting the product to the power supply.
- The input power of the product must meet the specifications listed in this guide. If the power input does not meet the specifications, the equipment may be damaged. Thus, check regularly that the DC power provided by the switching-mode power supply unit is stable.

Operation and Maintenance

- Operation and maintenance must be carried out by skilled personnel who have undergone specialized electrical training and possess comprehensive electrical expertise.
- Do not touch the terminals while the power is on. Failure to comply may result in electric shock or malfunction.
- Disconnect all external power supplies of the system before cleaning the module. Failure to comply may result in electric shock.
- Disconnect all external power supplies of the system before assembling/disassembling the module or connecting/removing the communication cables. Failure to comply may result in electric shock or malfunction.

Safety Recommendations

- In the position where the operator directly touches the machinery part, for example, where a machinery tool is loaded/unloaded, or where a machine runs automatically, the on-site manual operating devices and any other alternative means must be carefully arranged and designed so that they are independent of the programmable controller and can start or terminate the automatic running of the system.
- If modification on the program is needed during system operation, use the lock function or other protective measures. Ensure that only authorized personnel can make the necessary modifications.

Disposal

- Treat the scrapped product as industrial waste. Dispose of the battery according to local laws and regulations.
- Recycle retired equipment by observing industry waste disposal standards to avoid environmental pollution.

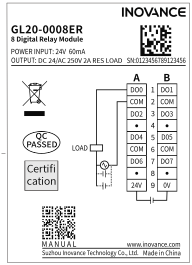
1 Product Information

1.1 Naming Rules and Nameplate

GL 20 -00 08 E R

① ② ③ ④ ⑤ ⑥

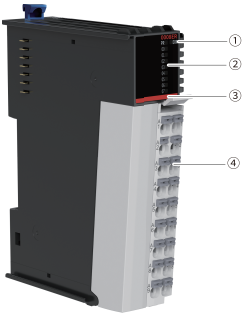
① **Product Information** GL: Inovance general local module	③ **Number of I/O Channels** 00: 0 input	⑤ **Module Type** E: Logic I/O expansion module
② **Series** 20: 20 series module	④ **Number of I/O Channels** 08: 8 outputs	⑥ **Output type** R: Relay output



The data for ordering the product is shown below.

Model	Description	Product Code	Applicable model
GL20-0008ER	GL20 series 8-channel relay output general-purpose module	01440334	It is applicable for Easy series products and GL20 series communication interface modules (e.g., GL20-RTU-ECT and GL20-RTU-PN).

1.2 Components



No.	Name	Description			
①	Operation status indicator	PR (POWER +RUN)	Power/Run indicator	Yellow-green	• Steady ON: Module in normal operation • Quick flashing: Module addressed successfully • Slow flashing: Module powered on but not addressed • OFF: Module not powered on or abnormal
		ERR	Error indicator	Red	Module error
②	I/O signal indicator	00 to 07	I/O signal indicator	Yellow-green	• Steady ON: Output active • OFF: Output inactive
③	Color identification		Red: Digital output		Orange: Analog output
			Gray: Digital input		Green: Analog input
			White: Communication		Blue: Other module
④	User terminal	/	0 input and 8 outputs	/	See detailed definition in *"3.2 Terminal Assignment" on page 22*

- Quick flashing: 200 ms ON followed by 200 ms OFF.
- Slow flashing: 200 ms ON followed by 1s OFF.

1.3 Technical Specifications

■ General Specifications

Item	Specification
IP rating	IP20
Dimensions (W x H x D)	24 mm x 100 mm x 75 mm
Weight (g)	Approx. 105 g

■ Power supply specifications

Item	Specification
Rated voltage of bus input power supply	5 VDC (4.75 VDC to 5.25 VDC)
Rated current of bus input power supply	110 mA (typical@5 V)
Rated voltage of terminal input power supply	24 VDC (21.6 VDC to 26.4 VDC)
Rated current of terminal input power supply	60 mA (typical@24 V)
Rated voltage of terminal output power supply	/
Rated current of terminal output power supply	/
Hot swap	Not supported

■ Output specifications

Item	Specification
Output type	Digital output, relay output
Output mode	Dry contact
Maximum number of output channels	8
Output voltage class	250 VAC/30 VDC
Output load (resistive load)	2 A/channel; 8 A/module
Output load (inductive load)	1 A/channel; 4 A/module
Output load (lamp load)	30 W/channel; 120 W/module
Hardware response time ON/OFF	Approx. 15 ms
Minimum DC load	5 VDC, 5 mA[1]
Minimum AC load	250 VAC[1]

Item	Specification
Switching frequency	⩽ 20 cycles per minute If the rated output specifications are exceeded, the switching frequency should not exceed 6 cycles per minute.
Mechanical life	20,000,000 cycles
Electrical life	100,000 cycles
Isolation	Supported
Output action display	Output indicator ON (controlled by software) when output in drive state.
Output derating	Full load when working at 45°C (that is, the output current does not exceed 8 A when all output channels are ON at the same time), and 50% derating when working at 55°C (that is, the output current does not exceed 4 A when all output channels are ON at the same time).
Protective function	/

[1]: The lower limit target value for switch-on/switch-off operations under minimal load conditions, which may vary depending on switching frequency, ambient conditions, and the expected reliability level. It is recommended to verify this based on actual load conditions during use.

■ Software specifications

Item	Specification
Output PDO data volume	Max. 1 byte
Output state mode during fault stop	Output zero, output last value, output preset value
Output preset value during fault stop	0 or 1
Output port anomaly detection and indication	/
Output channel logic level configuration	Not supported

Item	Specification
Independent channel enable configuration	Not supported
Diagnostic report function configuration	Not supported
In the stop mode	Output according to the fault stop state mode and preset values, without further refreshing.

Note

- Background start/stop.
- The bus of GL20 communication interface module is out of communication due to disconnection of the network cable or manual state switching.
- The local bus stops operation.

1.4 Environmental Specifications

Item	Specification
Installation/ application environment	Free from conductive dust, conductive fibers, explosive dust, flammable gases, water mist/greasy dirt, corrosive dusts/gases, strong vibration, and repetitive shock
Altitude	⩽ 2,000 m
Pollution degree	2
Immunity	2 kV on power supply cable (compliant with 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 from 5 Hz to 8.4 Hz; 1 g acceleration from 8.4 Hz to 200 Hz; 10 cycles per axial direction • Transportation scenario: Tested according to IEC60068-2-64, 0.01 g^2/Hz power spectral density from 5 Hz to 100 Hz; 0.001 g^2/Hz power spectral density at 200 Hz; 1.14 g Grms

Item	Specification
Shock resistance	Application/Transportation scenario: Tested according to IEC60068-2-27; 15 g peak acceleration, 11 ms pulse width, 18 cycles in total in X, Y and Z axial directions
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

2 Mechanical Installation

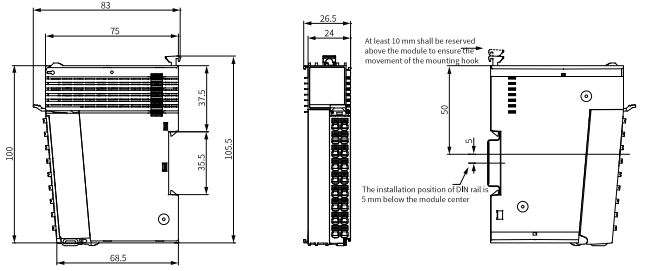
2.1 Installation Precautions

- Make sure the module is powered off before installing or removing.
- Do not hot swap the modules. Otherwise, the modules may be damaged by overcurrent or overvoltage, and the communication interface module or PLC may be subject to restart, user data loss or corruption.
- Do not drop or shock the housing or terminals of the module to avoid damage.

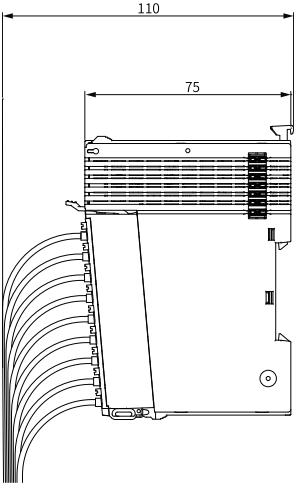
2.2 Installation Dimensions

■ Module

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

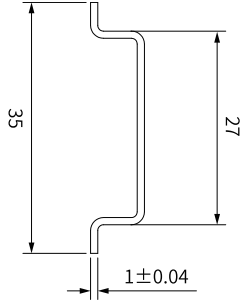


■ **Cable connection**



2.3 Installation Method

The module is mounted onto a DIN rail in conformity with IEC 60715 (width: 35 mm, thickness: 1 mm). The dimensions (in mm) are shown below.

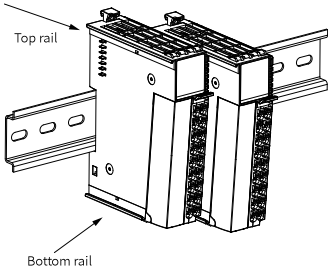


Caution

When installed on a DIN rail other than the recommended one (especially the one whose thickness is not 1.0 mm), the product will not fit in place as the mounting hook does not work.

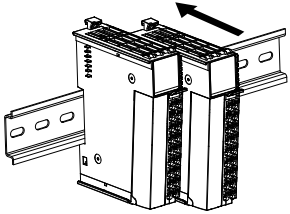
■ Installing the modules to each other

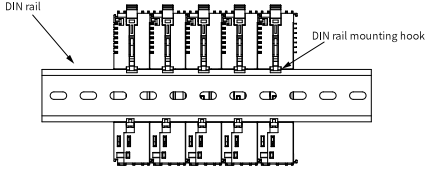
Install the modules to each other through top and bottom guide rails, as shown below.



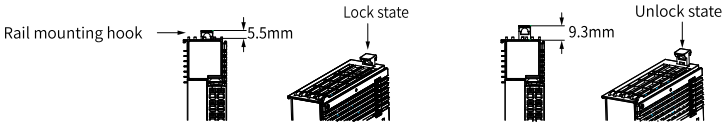
■ Installing the module onto DIN rail

1. Align the module with the DIN rail and push it in the direction indicated by the arrow until you hear a click. See the following figure.





2. Make sure the DIN rail mounting hook of the module is locked. The locked and unlocked states of the mounting hook are shown below.



- If the mounting hook is pressed down, it is locked.
- If the mounting hook is lifted up, it is unlocked.

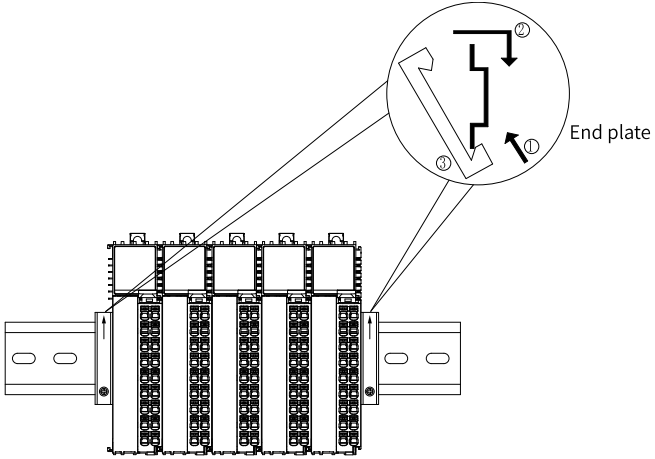
To lock the PLC to the DIN rail, press down the mounting hook.

Caution

When the module is not installed on the rail, keep the mounting hook in the locked state. Keeping the mounting hook unlocked for a prolonged time may cause the hook to fail.

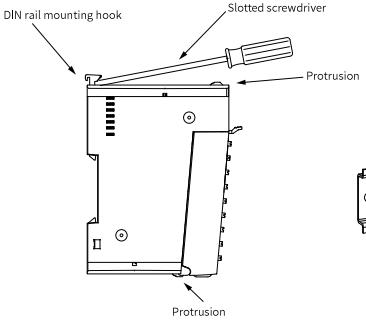
3. Mount a DIN rail end plate on both sides of the PLC or the module.

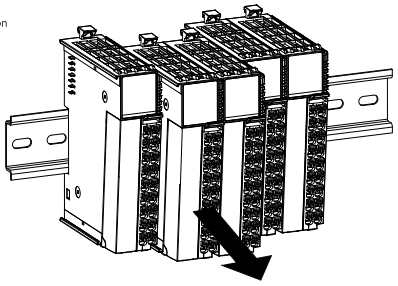
   To mount the end plate, hook the bottom of it to the bottom of the DIN rail, rotate the end plate to hook the top of it to the top of the DIN rail, and then tighten the screw to lock the end plate in place.



■ Removal

Pry the DIN rail mounting hook upwards with a tool such as a slotted screwdriver, hold the protrusions and pull the module out straight forward. Then, press down the top of the mounting hook.





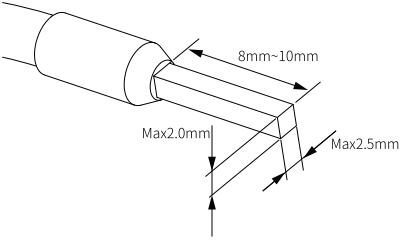
3 Electrical Installation

3.1 Cable Selection

The cable lug and cable diameter included in the following table are only for reference.

Material Name	Applicable Cable Diameter		KST		Suzhou Yuanli	
	mm^2	AWG	Model	Crimping Tool	Model	Crimping Tool
Tubular lug	0.3	22	E0308	KST2000L	0308	YAC-5
	0.5	20	E0508		0508	
	0.75	18	E7508		7508	
	1.0	18	E1008		1008	
	1.5	16	E1508		1508	

If you use other types of tubular lug, crimp the lug to the cables according to the shape and dimension requirements shown in the figure below.



3.2 Terminal Assignment

The terminal layout is shown in the following figure.

The terminal assignments are detailed in the following table:

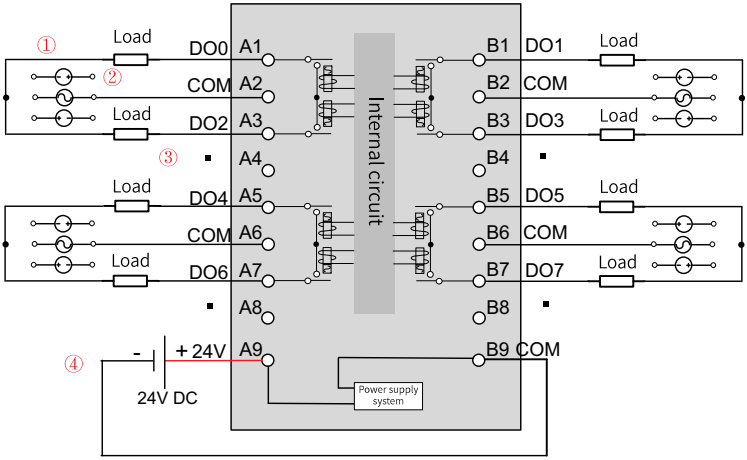
Left Signal	Left Terminal	Right Terminal	Right Signal
DO0	A1	B1	DO1
COM	A2	B2	COM
DO2	A3	B3	DO3
-	A4	B4	-
DO4	A5	B5	DO5
COM	A6	B6	COM
DO6	A7	B7	DO7
-	A8	B8	-
24V	A9	B9	0V

See the following table for the correspondence between terminal signals and signal indicators.

Terminal Signal	Signal Indicator
DO0	00
DO1	01
DO2	02
DO3	03

Terminal Signal	Signal Indicator
DO4	04
DO5	05
DO6	06
DO7	07

3.3 Terminal Wiring



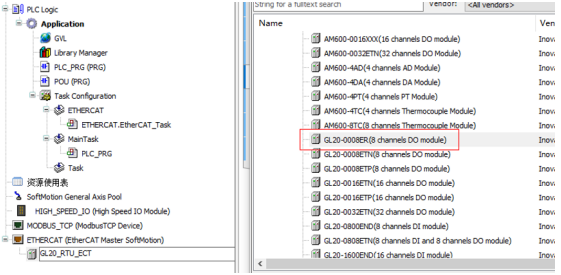
No.	Description
①	Wiring of output terminals
②	Load power supply: AC/DC
③	Unused terminal, no connection allowed
④	Wiring of power supply (A9, B9)

All COM interfaces (A2, A6, B2, B6) within the module are internally connected. Only one type of load power supply method can be used for a single 0008ER module, otherwise the module and loads may be damaged.

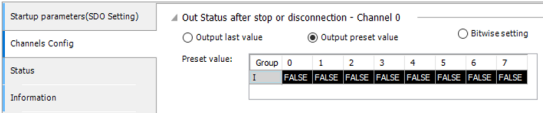
4 Programming Commissioning

The following is an example where the variable of the GL20-0008ER module is assigned to the corresponding output variable, and AM600 is used as the main control module.

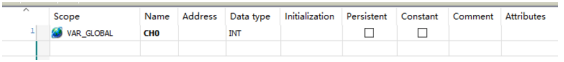
1. Add GL20-0008ER module.



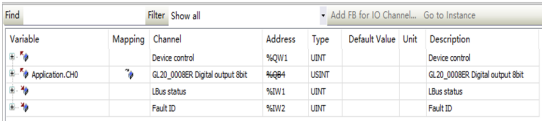
2. Double click the module and set the "Out Status after stop or disconnection".



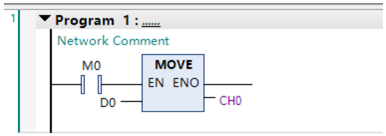
3. Add a custom variable CH0.



4. Map CH0 to channel 0 of the configured module.



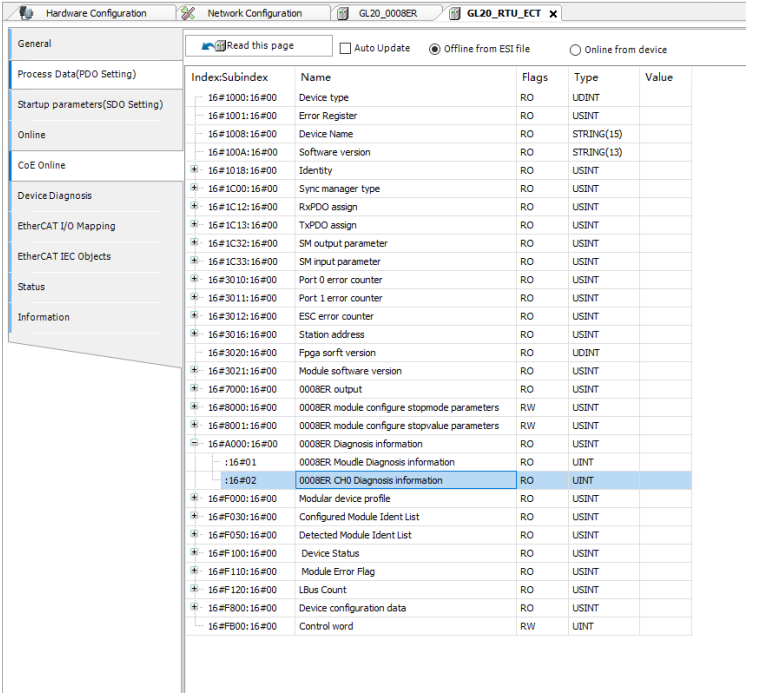
5. Define a variable D0 with the LD programming language as shown in the figure below.



6. After successful compiling, download the project and run it.

5 Fault Diagnosis

When the ERR indicator is ON, it indicates that the module encounters a fault. The module reports an error code. You can get the error code information through the diagnostic data object dictionary value displayed on the "CoE Online" interface, as shown below.



Index:Subindex	Name	Flags	Type	Value
16#1000:16#00	Device type	RO	UDINT	
16#1001:16#00	Error Register	RO	USINT	
16#1008:16#00	Device Name	RO	STRING(15)	
16#100A:16#00	Software version	RO	STRING(13)	
16#1018:16#00	Identity	RO	USINT	
16#1C00:16#00	Sync manager type	RO	USINT	
16#1C12:16#00	RxPDO assign	RO	USINT	
16#1C13:16#00	TxPDO assign	RO	USINT	
16#1C32:16#00	SM output parameter	RO	USINT	
16#1C33:16#00	SM input parameter	RO	USINT	
16#3010:16#00	Port 0 error counter	RO	USINT	
16#3011:16#00	Port 1 error counter	RO	USINT	
16#3012:16#00	ESC error counter	RO	USINT	
16#3016:16#00	Station address	RO	USINT	
16#3020:16#00	Fpga sorft version	RO	UDINT	
16#3021:16#00	Module software version	RO	USINT	
16#7000:16#00	0008ER output	RO	USINT	
16#8000:16#00	0008ER module configure stopmode parameters	RW	USINT	
16#8001:16#00	0008ER module configure stopvalue parameters	RW	USINT	
16#A000:16#00	0008ER Diagnosis information	RO	USINT	
:16#01	0008ER Moudle Diagnosis information	RO	UINT	
:16#02	0008ER CH0 Diagnosis information	RO	UINT	
16#F000:16#00	Modular device profile	RO	USINT	
16#F030:16#00	Configured Module Ident List	RO	USINT	
16#F050:16#00	Detected Module Ident List	RO	USINT	
16#F100:16#00	Device Status	RO	USINT	
16#F110:16#00	Module Error Flag	RO	USINT	
16#F120:16#00	LBus Count	RO	USINT	
16#F800:16#00	Device configuration data	RO	USINT	
16#FB00:16#00	Control word	RW	UINT	

- **Process Data**
  - Mapping data

    For the module installed in slot n (n=0-31), the object dictionary definition for index 0x1600+0x08*n is shown in the table below.

Index	0x1600+0x08*n: 0008ER RPDO bit mapping				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	Sub-index 000	USINT	RO	NO	8
1	Sub-index 001	UDINT	RO	NO	0x7xx00101
2	Sub-index 002	UDINT	RO	NO	0x7xx00201
3	…	…	…	…	…
8	Sub-index 008	UDINT	RO	NO	0x7xx00801

For the module installed in slot n (n=0-31), the object dictionary definition for index 0x1601+0x08*n is shown in the table below.

Index	0x1601+0x08*n: 0008ER RPDO byte mapping				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	Sub-index 000	USINT	RO	NO	1
1	Sub-index 001	UDINT	RO	NO	0x7xx00108

For the module installed in slot n (n=0-31), the object dictionary definition for index 0x1602+0x08*n is shown in the table below.

Index	0x1602+0x08*n: 0016XX RPDO word mapping				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	Sub-index 000	USINT	RO	NO	1
1	Sub-index 001	UDINT	RO	NO	0x7xx00110

- Process Data

  For the module installed in slot n (n=0-31), the object dictionary definition for index 0x7000+0x40*n is shown in the table below.

Index	0x7000+0x40*n: 0008ER Output				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	Sub-index 000	USINT	RO	NO	1
1	Channel 0 to 8 digital output	USINT	RW	YES	0

- **Configuration Data**

  For the module installed in slot n (n=0-31), the object dictionary definition for index 0x8000+0x40*n is shown in the table below.

Index	0x8000+0x40*n: 0008ER Stop Mode				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	Sub-index 000	USINT	RO	NO	1
1	Channel 0 digital output in stop mode	USINT	RW	NO	0xFF

Sub-index 1 channel 0 digital output in stop mode:

Bit 0 to 7	Output mode upon stop: each bit corresponds to an output port. 0: Keep present output status 1: Output to preset value defined in object dictionary 8001

For the module installed in slot n (n=0-31), the object dictionary definition for index 0x8001+0x40*n is shown in the table below.

Index	0x8001+0x40*n: 0008ER Output Value in Stop Mode				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	Sub-index 000	USINT	RO	NO	1
1	Channel 0 digital output value in stop mode	USINT	RW	NO	0

Sub-index 1 channel 0 digital output value in stop mode:

Bit 0 to 7	Output preset value upon stop: each bit corresponds to the preset value of a output port. 0: output 0 1: output 1

- **Diagnostic Data**

  For the module installed in slot n (n=0-31), the object dictionary definition for index 0xA000+0x40*n is shown in the table below.

Index	0xA000+0x40*n: 0008ER Error Code				
Sub-index	Name	Data Type	Access Mode	Mapping	Default Value
0	0008ER error code	USINT	RO	NO	3
1	0008ER module error code	UINT	RO	NO	0
2	0008ER channel 0 error code	UINT	RO	NO	0

Module error code

Error code	Description	Solution
0x5003	External 24 V power failure	Check the isolated power supply of the module.

6 Appendix: Version Matching Information

You can get the firmware of the module and the firmware of communication interface module from Inovance technical support, and get XML file and InoProShop from *https://www.inovance.com*. The following table describes the version matching information.

Module Firmware Version	Communication interface module firmware version	XML/GSD file version	AutoShop/ InoProShop version
Logic software: 0.1.A.0 and later	• GL20-RTU-ECT: Board software 2.4.12.0 and later • GL20-RTU-PN: Board software 2.2.0.0 and above	• GL20-RTU-ECT: 1.3.9.0 and later • GL20-RTU-PN: 20230523 and later	• AutoShop: V4.6.5.0 and later • InoProShop: V1.7.3 SP2 and later