

# EtherCAT 远程I/O从站 型号GX 系列

## 安全上的注意事项

感谢您购买本公司的GX 系列EtherCAT 远程I/O从站。  
为了您能安全地使用本产品请务必阅读本说明书和下述参考手册。有关参考手册可以与本公司最近的代理商联系并使用最新版。另外，请妥善保管本说明书和参考手册同时请向最终客户寄送此类资料。

EtherCAT GX 系列 用户手册 (SBDC-350 □)

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## 安全上的注意事项

### ■警告/注意标识的含义



**警告**

如不正确处理，则有可能对人身造成轻度或中度的伤害，严重情况下，甚至会导致重伤或死亡。另外可能会造成重大财物损失。



**注意**

如不正确处理，则有可能对人身造成轻度或中度伤害，另外可能会造成财物损失。

### ■警告标识



**警告**

<p>通电中请勿触摸端子、请勿拆卸单元、触摸产品内部零件。 请勿在打开盖板的状态下通电。 否则有触电危险。</p>	
<p>请勿拆卸、修理、改造本单元。 否则有触电危险。</p>	
<p>考虑到即使由于可编程控制器 (PLC) 的故障或PLC 外部的原因导致出现异常时，系统整体也能安全运行，所以请务必在本单元外部采取安全措施。 异常动作可能会引起重大事故。 (1) 请务必与异常停止回路、互锁回路、限制回路等安全保护相关的回路构成本单元外部的控制回路。 (2) 当PLC 通过自检功能检测出异常时或是执行运行中止故障诊断 (FALS) 指令时，要停止运行使所有输出为OFF。此时，为了使系统能在安全的情况下运行，请在本单元外部采取相应措施。 (3) 有时由于输出继电器的熔断和烧毁，输出晶体管损坏等原因会导致本单元的输出始终停留在ON 或OFF 状态。此时，为了使系统能在安全的情况下运行，请在本单元外部采取相应措施。 (4) 如果本单元的DC24V 输出 (工作电源) 过载或短路时，电压会下降，有时输出会变成OFF 此时为使系统能安全的情况下运行，请在本单元外部采取相应的措施。</p>	
<p>即使在运行终止的状态 (编程模式) 下，CPU 单元仍进行I/O更新。因此，如果因为以下几项操作而使本单元分配的输出继电器区域的数据或是高功能I/O单元/CPU 高功能单元分配的各继电器区域的数据发生变更的话，请充分确认安全性后再运行。否则可能引起本单元或是高功能I/O单元/CPU 高功能单元所连接的负载发生不可预料的动作。 · 运用外围设备 (计算机) 向I/O存储器的CPU单元进行传送。 · 运用外围设备，改变当前值。 · 运用外围设备，进行强制设定/重设。 · 将存储卡或是EM 文件存储的信息，传送到I/O存储文件的CPU 单元。</p>	
<p>输入本单元的电压/电流，请确保在规定范围内。 如果使用超出范围的电压/电流的话，可能引起故障和火灾。</p>	

## 安全上的要点

- 运送单元时请使用专门的包装箱。在运输过程中请尽量避免过度振动和冲击。
- 请确保切实安装好DIN 导轨。
- 请按照参考手册中规定的扭矩拧好本单元的安装螺丝、电缆上的螺丝。
- 请确保采用锁定单元的元件 (端子台、通信电缆等) 被正确锁定到位。
- 在数个系统中使用时，为防止某些干扰导致运行的不稳定，各电缆束之间务必留出5mm 以上的间隔。
- 通信距离以及连接台数请在规格范围内使用。
- 接线以及施工时，请注意不要让金属屑进入单元内部。
- 接线时，请使用正确的接线工具。
- 请务必使用指定的通信电缆、连接器。
- 接线时，请注意端子的极性。
- 请按照参考手册中规定的扭矩拧紧端子台螺丝。螺丝松动的话可能会引发火灾、误动作、故障。
- 请使用参考手册上指定的电源电压。
- 请不要拽拉或弯折电缆超过其允许的限度。
- 通信电缆接线时，请注意以下几点。
  - 通信电缆请远离动力线、高压线。
  - 请不要弯折通信电缆。
  - 请不要拽拉通信电缆超过其允许的限度。
  - 请不要在通信电缆上堆放物品。
  - 通信电缆请在电线槽内接线。
- 通信电缆必须在PLC 及所有从站OFF 的状态下接线。
- 在电源状况不佳的地方使用时，请尽量能供给稳定的额定电压和额定频率。
- 为防止外部配线短路，请设置电流断路器等安全对策。
- 如因信号线断开、瞬间停电而产生异常信号时，请使用者采取安全保护措施。
- 请勿将超出最大开关容量的电压或负载接到输出单元。
- 请勿将超出额定值的电压接到输入单元。
- 请将恢复运行所需的存储器数据和保持继电器的内容、参数及数据传送给更换好的CPU 单元、高功能I/O单元后再开始运行。
- 用户程序在单元中正式运行前需充分检查。
- 请充分确认接线、开关等的设定后再通电。
- 在进行以下操作时，请将PLC 本体和从站电源、通信用电源关闭 (OFF) 。
  - 组装本体 (增设单元)
  - 拆装端子台以及连接器
  - 更换零件 (继电器等)
  - 设定拨位开关和旋转开关
  - 连接电缆或接线

● 请确认对设备没有影响之后再行下列操作。

- PLC 动作模式的切换
- 继电器接点的设定/重设
- 用户程序的设定值和当前值的变更
- 在接触单元前，为使人体所积聚的静电放电，请务必先接触接地金属。
- 当更换零件 (继电器等) 时，请务必确认新零件的规格是否正确再进行安装。
- 有关符合EMC 指令的条件，请参照相应的参考手册。
- 本产品为“class A” 工业环境产品。如果使用于住宅环境可能会引起电磁干扰。因此当使用于住宅环境时请做好电磁干扰的对应措施。

## 使用上的注意

- 请按照参考手册，正确使用。如果未正确设置，可能引起故障。
- 请勿使产品坠落或受异常振动和冲击。否则可能引起故障和误动作。
- 请勿在以下场所中使用。
  - 受日光直射的场所
  - 环境温度 and 相对湿度超过规格要求的场所
  - 温度变化剧烈，容易引起结露的场所
  - 有腐蚀性气体、可燃性气体的场所
  - 尘土、粉尘、盐分、铁粉较多的场所
  - 有水、油、酸、药品等飞溅的场所
  - 对本体直接产生振动和冲击的场所
- 在以下场所使用时，请采取遮蔽措施。
  - 因静电等原因产生干扰的场所
  - 有较强电磁场的场所
  - 可能暴露于射线的场所
  - 靠近电源线的场所
- 请按照参考手册正确接线。
- 接线时，请使用正确的接线部品。
- 通信回路和电源接线以及I/O信号回路接线时，请注意电压规格。如果使用规格，可能引发故障。

## 使用时的承诺事项

在以下条件和环境中使用时，希望向本公司营业部门人员咨询并确认规格书，同时对额定值，功能等要留有余地地使用，要考虑到安全保险措施，同时寻求即使发生故障，也能将危险控制到最小程度的安全对策。

- 用于室外、或者用于有潜在的化学污染或电气干扰的场合，或者用于产品样本或使用说明书中所没有记载的条件和环境下。
- 用于原子能控制设备、燃烧装置、铁路、航空、车辆设备、医疗器械、娱乐机械、安全装置以及行政机关和个别产业的规定而配置的设备。
- 危及人身及财产的系统·机械·装置。
- 天然气、自来水、电力等供应系统和其他24小时连续运转的系统等可靠性要求高的设备。
- 除以上的a)~d) 条件和环境之外的其他要求高安全性的用途。

\*以上仅为一部分适用的条件和环境。请详细阅读本公司最佳综合产品样本、规格书等最新版本的产品目录。

### ■联系方式

#### ● 制造商

欧姆龙 (上海) 有限公司  
地址: 中国上海市浦东新区金桥出口加工区金吉路789号  
电话: (86)21-50509888

#### ● 技术咨询

欧姆龙自动化 (中国) 有限公司  
地址: 中国上海市浦东新区银城中路200号中银大厦211室  
电话: (86)21-5037-2222  
技术咨询热线: 400-820-4535  
网址: <http://www.fa.omron.com.cn>

# OMRON

## EtherCAT Remote I/O Slaves GX Series

### Safety Precautions

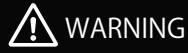
Thank you for purchasing an OMRON EtherCAT remote I/O slave, GX-series. To ensure safe operation, please be sure to read this document along with the manuals for -series Slave Unit. Please be sure you are using the most recent versions of the user manuals. Contact your nearest OMRON representative to obtain manuals. Keep this document and all user manuals in a safe location and be sure that they are readily available to the final user of the products.

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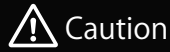
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## Safety Precautions

### ■ Meanings of Signal Words



**WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.



**Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

### ■ Warning Symbols



Do not attempt to disassemble this unit and do not touch the interior of any Unit while the power is being supplied. In addition, do not turn on electricity in the state that founded a cover. Doing so may result in electric shock.



Do not attempt to disassemble, repair, or modify this unit. Any attempt to do so may result in malfunction, fire, or electric shock.



Provide external safety measures for slave units, including the following items, to ensure safety in the system if an abnormality occurs due to malfunction of the PLC or another external factor affecting the PLC operation. Not doing so may result in serious accidents.

- Emergency stop circuits, interlock circuits, limit circuits, and similar safe measures must be externally provided to Slave Unit.
- The PLC will turn OFF all outputs when its self-diagnosis function detects any error or when a severe failure alarm (FALS) instruction is executed. As a countermeasure for such errors, external safety measures must be provided to ensure safety in the system.
- The PLC outputs may remain ON or OFF due to deposits on or burning of the output relays, or destruction of the output transistors. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.
- When the 24-V DC output (service power supply) is overloaded or shortcircuited, the voltage may drop and result in the outputs being turned OFF. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.



The CPU Unit refreshes I/Os even when the program is stopped (i.e., even in PROGRAM mode). Confirm safety thoroughly in advance before changing the status of any part of memory allocated to I/O Units, Special I/O Units, or CPU Bus Units. Any changes to the data allocated to any Unit may result in unexpected operation of the loads connected to the Unit. Any of the following operation may result in changes to memory status.

- Transferring I/O memory data to the CPU Unit from a programming Device.
- Changing present values in memory from a Programming Device.
- Force-setting/-resetting bits from a Programming Device.
- Transferring I/O memory files from a Memory Card or EM file memory to the CPU Unit.



Do not apply the voltage/current outside the specified range to this product. It may cause a malfunction or fire.



## Precautions for Safe Use

- When transporting this product, use special packing boxes and protect it from being exposed to excessive vibration or impact during transportation.
- Mount the Units securely using DIN track.
- Make sure that all Slave Unit mounting screws and cable screws are tightened to the torque specified in the relevant manuals. Incorrect tightening torque may result in malfunction.
- Make sure that the terminal blocks, communications cables, and other items with locking devices are properly locked into place. Improper locking may result in malfunction.
- Always separate cables by at least 5 mm to prevent unstable operation due to interference. Do not bundle cables.
- Do not extend connection distances or the number of connected nodes beyond the ranges given in the specifications.
- Do not allow foreign matter to enter this product.
- Use correct wiring tools to wire the Units.
- Use the correct wiring materials to wire the Units.
- Always use the specified communications cables and connectors.
- Confirm the polarity of all terminals before wiring them.
- Make sure that all terminal block screws are tightened to the torque specified in the relevant manuals. Incorrect tightening torque may result in malfunction.
- Always use the power supply voltage specified in the user manuals. An incorrect voltage may result in malfunction or burning.
- Do not bend cables past their natural bending radius or pull on cables.
- Observe the following precautions when wiring the communications cable.
  - Separate the communications cables from the power lines or high-tension lines.
  - Do not bend the communications cables past their natural bending radius.
  - Do not pull on the communications cables.
  - Do not place heavy objects on top of the communications cables.
  - Always lay communications cable inside ducts.

- Turn off the power of PLC and all slaves before wiring the communication cables.
- Take appropriate measures to ensure that the specified power with the rated voltage and frequency is supplied. Be particularly careful in places where the power supply is unstable. An incorrect power supply may result in malfunction.
- Install external breakers and take other safety measures against short-circuiting in external wiring. Insufficient safety measures against short-circuiting may result in burning.
- Fail-safe measures must be taken by the customer to ensure safety in the event of incorrect, missing, or abnormal signals caused by broken signal lines, momentary power interruptions, or other causes.
- Do not apply voltages or connect loads to the Output Units in excess of the maximum switching capacity. Excess voltage or loads may result in burning.
- Do not apply voltages to the Input Units in excess of the rated input voltage. Excess voltages may result in burning.
- After replacing Units, resume operation only after transferring to the new CPU Unit and/or Special I/O Units the contents of the DM Area, HR Area, and other data required for resuming operation. Not doing so may result in an unexpected operation.
- Check the user program for proper execution before actually running it on the Unit. Not checking the program may result in unexpected operation.
- Check all wiring and switch settings to be sure they are correct.
- Always turn OFF the power supply to the PLC and Slave Unit/Repeater Unit before attempting any of the following. Not turning OFF the power supply may result in malfunction or electric shock.
  - Assembling any Units (Expansion Units).
  - Removing or attaching terminal blocks and connectors to Slave Unit/Repeater Unit.
  - Replacing parts (relays).
  - Setting DIP switches or rotary switches.
  - Connecting cables or wiring the system.
- Confirm that no adverse effect will occur in the system before attempting any of the following. Not doing so may result in an unexpected operation.
  - Changing the operating mode of the PLC.
  - Setting/resetting any bit in memory.
  - Changing the present value of any word or any set value in memory.
- Touch a grounded piece of metal to discharge static electricity from your body before touching any Unit.
- When replacing parts (relay, etc.), be sure to confirm that the ratings of the new part are correct. Not doing so may result in malfunction or burning.
- For condition for EMC-compliance, please refer to manual for installation.
- This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

## Precautions for Correct Use

- Install correctly according to instructions in the manuals. Improper installation of the Unit may result in malfunction.
- Do not drop any Unit or subject any Unit to excessive shock or vibration. Otherwise, Unit failure or malfunction may occur.
- Do not operate the control system in the following locations:
  - Locations subject to direct sunlight.
  - Locations subject to temperatures or humidity outside the range specified in the specifications.
  - Locations subject to condensation as the result of severe changes in temperature.
  - Locations subject to corrosive or flammable gases.
  - Locations subject to dust (especially iron dust) or salts.
  - Locations subject to exposure to water, oil, acid, or chemicals.
  - Locations subject to shock or vibration.
- Take appropriate and sufficient countermeasures when installing systems in the following locations:
  - Locations subject to static electricity or other forms of noise.
  - Locations subject to strong electromagnetic fields.
  - Locations subject to possible exposure to radioactivity.
  - Locations close to power lines.
- Wire all connections correctly according to instructions in the manuals.
- Use the correct wiring materials to wire the Units.
- Confirm voltage specifications when wiring communications, the power supply, and I/Os. Incorrect wiring may result in malfunction.

## SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products. Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

See also product catalogs for Warranty and Limitations of Liability.

# OMRON

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Note: Specifications subject to change without notice.