OMRON

EtherCAT系列

传感器通信单元

生産終了
DISCONTINUED

安全上的注意

感谢您购买本公司的EtherCAT系列传感器通信单元，型号E3X-ECT。
为了您能安全地使用本产品，请务必阅读本说明书和E3X-ECT的参考手册。
有关参考手册，可以与本公司最近的代理商联系并索取最新版资料。
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。

欧姆龙(上海)有限公司

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安全上的注意

●警告/注意标示的含义

⚠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务损失。
⚠注意	如不正确处理，则有可能对人身造成轻度或中度伤害，另外可能会造成财务损失。

●警告标示

⚠警告

通电中请勿触摸端子、请勿拆卸单元、触摸产品内部零件。否则有触电危险。

考虑到即使可编程控制器（PLC）发生故障，或PLC外部原因导致出现异常时，系统整体也能安全运行，请务必在PLC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PLC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，会中止运行。此时，为了使系统能在安全的情况下运行，请在PLC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PLC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PLC外部采取相应措施。
（4）如果PLC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，为了使系统能在安全的情况下运行，请在PLC外部采取相应措施。

因为CPU在运转停止的状态下（编程模式），也可以进行I/O刷新。所以，在更改输出单元的输出位分配、或更改高功能I/O单元、CPU高功能单元的输出位分配时，请充分确认安全性后再实施。
当负载被连接在输出单元、或高功能I/O单元、CPU高功能单元时，可能会发生意外。

- 使用编程设备（电脑工具）把I/O存储区数据传送到CPU单元
- 使用编程设备变更当前值
- 使用编程设备强制置位/强制复位存储器中的任意位
- 使用储存卡或者EM文件存储器，把I/O存储区数据传送到CPU单元
- 通过网络上的其它PLC或上位电脑，传送I/O存储区数据

安全上的要点

●为了防止信号线的断线或瞬间停电等导致的信号异常，请用户使用故障安全防护装置。
●为了确保安全，必须在PLC的外部回路中追加互锁回路、限制回路等。
●请使用参考手册上的电源电压。
●在电源状况不佳的地方使用时，请尽量供给稳定的额定电压和额定频率。
●为防止外部接线短路，请设置电流断路器等安全对策。
●安装时请务必进行D类接地方式（第3种接地）
●请准确安装导轨和螺丝。
●在组装本体时，请关闭电源。
●请充分确认接线、开关的设定等没有错误后，再通电。
●请勿对输入单元施加超过额定值的电压。
●请勿对输出单元施加超过最大开闭能力的电压、也勿接续过载负荷。
●在进行以下操作时，请关闭PLC本体、扩展单元的电源、以及通信用的电源。
・拆装I/O单元、CPU单元、电源单元、存储卡、主单元
・拆装远程I/O终端单元的端子台
・组装单元
・设定DIP开关或旋转开关
・连接导线或布线
●在进行以下操作时，请确认不会对设备产生影响。
・变更PLC动作模式
・强制置位/复位存储区中的任意位
・变更用户程序上的设定值和当前值
●在更换零件时，请确认新零件的规格是否正确。
●请将恢复运行所必须的数据存储、以及保持继电器的内容、参数、数据，在传送给更换好后的CPU单元和高功能I/O单元后，再开始运行。
●在旋转开关设定以及接线完成后，用指定扭矩紧固上盖的螺丝。采用不正确的扭矩可能导致防护构造无效（仅对于防水型产品）。
●请勿分解、修理、改造本产品。
●请遵照参考手册上规定的扭矩，紧固端子台上的螺丝。如果螺丝松脱，会造成着火、误动作、故障等。
●请遵照参考手册上规定的扭矩，紧固从站的螺丝、电缆的螺丝。
●在接线时，请使用正确的接线零件。
●请充分确认接线正确后再通电。
●在接线和施工的时候，请注意不要让金属屑掉入单元内部。
●接线时请注意端子的极性。
●给电源单元和I/O单元回路接线时请注意电压规格。出错的话会造成故障。
●请遵照参考手册正确地接线。
●如果端子台、通信电缆上有锁定结构装置，请确认已经锁住后再使用。
●请勿让产品掉落或给产品施加异常的震动和冲击。会造成故障、误动作。
●在运送单元时请使用专用的包装箱。在运输过程中请尽量避免过度震动和冲击。
●在运行用户程序前，确认程序的可行性。没有经过确认的程序可能会引起意外发生。
●在接触单元前，为释放人体所积聚的静电，请务必先接触接地金属。
●请勿不合理地拽拉或弯折电缆。
●请使用指定的通信电缆和连接器。
●通信电缆接线时，请遵守以下几点。
・通信电缆请远离电源线、高压线
・请勿弯折通信电缆
・请勿过度拽拉通信电缆
・请勿在通信电缆上堆放物体
・请在电线槽内给通信电缆接线
●请在规格范围内使用通信距离和接续台数。

使用上的注意

●请按照参考手册，正确地进行设置。
●请勿在以下环境中使用。
・受日光直射的场所
・环境温度和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、药品等飞沫的场所（防水型产品除外）
・有油、酸、药品等飞沫的场所（仅对于防水型产品）
・对本体直接产生振动和冲击的场所
●在以下场所使用时，请充分采取遮蔽措施。
・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
●使用E3X-CRT时，请在通讯单元的左侧、和最右侧放大器的右侧，把附件中的两块边缘导轨准确地安装在DIN导轨上。

参考手册

型号/手册名称		手册No.
CJ1W-NC□81/□82	位置控制单元 用户手册	SBCD-359
NJ系列	CPU单元内藏 EtherCAT端口 用户手册	SBCD-358
E3X-ECT	E3X-ECT 用户手册	SCHE-762

使用时的承诺事项

①为了确保安全，请勿将本产品直接或间接用于人体检测。需要使用该用途时，请选用本公司传感器综合样本中刊登的安全传感器。
②使用于下列用途时，请与本公司营业担当商谈、并根据规格书等确认后，采用相对于额定性能留有一定余裕度的使用方法或者采取即使出现故障也能使危险度降低到最小的安全电路的对策。
a)屋外使用、用于有潜在的化学污染或者有电气妨害时，或者是产品手册、使用说明书等没有记载的条件或环境中使用时
b)用于原子能控制设备、焚烧设备、铁路・航空・车辆设备、医疗设备、娱乐器械、安全装置以及按照行政机关或个别业界规定制造的设备时
c)用于可能危及生命、财产的系统・机械・装置时
d)用于煤气、水道、电力供给系统或者24小时连续运转系统等的高可靠性设备时
e)用于其他，以上述a)~d)为基准，需要高度安全性的用途时
*上述内容是适用条件的一部分。请参阅本公司综合产品手册・数据等最新版商品目录、手册中记载的保证・免责事项内容后再使用。

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EtherCAT Slave, Sensor Communication Unit Safety Precautions

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Thank you for purchasing an OMRON EtherCAT Slave Unit. To ensure safe operation, please be sure to read this document along with the manuals for EtherCAT 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.

■ General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.
Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, petrochemical plants, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.
Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

■ Safety Precautions

Definition of Precautionary Information

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury

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

Warnings and Cautions

⚠WARNING Do not attempt to take any Unit apart while the power is being supplied. Doing so may result in electric shock.

⚠WARNING Do not touch any of the terminals or terminal blocks while the power is being supplied. Doing so may result in electric shock.

⚠WARNING Do not attempt to disassemble, repair, or modify any Units. Any attempt to do so may result in malfunction, fire, or electric shock.

⚠WARNING Provide safety measures in external circuits, i.e., not in the Programmable Controller (CPU Unit including associated Units; referred to as "PLC"), in order 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 safety measures must be provided in external control circuits.
- 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 deposition 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-VDC output (service power supply to the PLC) 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.

⚠WARNING 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. Not doing so may result in serious accidents.

⚠WARNING The CPU Unit is I/O refreshing even in an operation-stopped state (Programming Mode). Therefore, confirm safety when changing data of Output bits allocated to Output Units, or of each CIO Area allocated to Special I/O Units or CPU Bus Units. Unexpected operation may occur in the loads connected to Output Units, Special I/O Units, or CPU Bus Units.

- Transferring the contents of I/O Memory Area to the CPU Unit with a Programming Device
- Changing the present values with a Programming Device
- Force-setting/force-resetting any bit in memory with a Programming Device
- Transferring the contents of I/O Memory Area to the CPU Unit with a Memory Card or EM File Memory
- Transferring the contents of I/O Memory by another PLC or a host computer on the network

⚠Caution Pay careful attention to the polarities (+/-) when wiring. A wrong connection may cause malfunction of the system.

⚠Caution Tighten the screws on the terminal blocks to the torque specified in the operation manual. The loose screws may result in burning, malfunction, or a failure.

■ Operating Environment Precautions

⚠Caution Do not install the Unit in the following places:

- 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, or chemicals (excluding the waterproof type)
- Locations subject to exposure to oil, acid, or chemicals (only for the waterproof type)
- Locations subject to shock or vibration

⚠Caution Take appropriate and sufficient countermeasures when using the Unit 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 supplies

⚠Caution The operating environment of the PLC System can have a large effect on the longevity and reliability of the system. Improper operating environments can lead to malfunction, failure, and other unforeseeable problems with the PLC System. Be sure that the operating environment is within the specified conditions at installation and remains within the specified conditions during the life of the system.

■ Application Precautions

⚠WARNING Always heed these precautions. Failure to abide by the following precautions could lead to serious or possibly fatal injury.

- Always connect to 100 Ω or less when installing the Units. Not connecting to a ground of 100 Ω or less may result in electric shock.
- Mount the Units securely to a DIN Track or with screws.
- Always turn OFF the power supply to the PLC, Slave Units, and communication devices, before attempting any of the following. Not turning OFF the power supply may result in malfunction or electric shock.
  - Mounting or dismounting I/O Units, CPU Units, Power Supply Units, Memory Cassettes, Master Units, or any other Units
  - Mounting or dismounting terminal blocks on Remote I/O terminals
  - Assembling the Units
  - Setting DIP switches or rotary switches
  - Connecting or wiring the cables

⚠Caution Failure to abide by the following precautions could lead to faulty operation of the PLC or the system, or could damage the PLC or PLC Units. Always heed these precautions.

- Always use the power supply voltage specified in the operation manuals. An incorrect voltage may result in malfunction or burning.
- 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.
- Do not apply voltages to the Input Units in excess of the rated input voltage. Excess voltages may result in burning.
- 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.
- Install the Unit properly as specified in the operation manual. Improper installation of the Unit may result in malfunction.
- Be sure that all the terminal screws and cable connector screws of Slave Units are tightened to the torque specified in the relevant manuals. Incorrect tightening torque may result in malfunction.
- Use correct wiring parts for wiring.
- Wire correctly and double-check all the wiring or the setting switches before turning ON the power supply. Incorrect wiring may result in burning.
- Do not let a piece of metal enter the Units when wiring or installing.
- Be careful of voltage ratings when wiring a communication path with the Power Supply Unit and I/O Units. Wrong wiring may cause a failure.
- Wire correctly as specified in the manual.
- Be sure that the terminal blocks, communication cables, and other items with locking devices are properly locked into place. Improper locking may result in malfunction.
- Check the user program for proper execution before actually running it on the Unit. Not checking the program may result in an unexpected operation.
- Do not drop the Units or give the Units excessive vibration or shock. Doing so may cause a failure or malfunction.
  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
  - Force-setting/force-resetting any bit in memory.
  - Changing the present value or any set value of any word in a user program
- Resume operation only after transferring to the new CPU Unit and/or Special I/O Units the contents of the DM and HR Areas required for resuming operation. Not doing so may result in an unexpected operation.
- Tighten the screws on the cover to the specified torque after setting the rotary switches and wiring. Insufficient tightening torque may result in an inadequate protective structure. (Only for the waterproof type)
- Do not pull on the cables or bend the cables beyond their natural limit. Doing either of these may break the cables.
- Always use specified communication cables and connectors.
- Be careful of the following when wiring communication cables.
  - Keep communication cables away from power lines and high-voltage lines.
  - Do not bend communication cables.
  - Do not pull communication cables excessively.
  - Do not place objects on top of communication cables.
  - Always wire communication cables through a duct.
- Abide by the specifications for a communication distance and the number of Units to be connected.
- When replacing parts, be sure to confirm that the rating of a new part is correct. Not doing so may result in malfunction or burning.
- Before touching the Unit, be sure to first touch a grounded metallic object in order to discharge any static built-up. Not doing so may result in malfunction or damage.
- Use a dedicated packing box to transport the Unit. Avoid excessive shock or vibration during transportation.
- Always use two end plates to keep certainly connection side by side (E3X-ECT).

■ Unit Assembly Precautions

- When connecting the Power Supply Unit, CPU Unit, I/O Units, Special I/O Units, or CPU Bus Units, slide the upper and lower sliders until a click sound is heard to lock them securely. Desired functionality may not be achieved unless Units are securely locked in place.
- Be sure to mount the end cover supplied with the CPU Unit to the rightmost Unit. Unless the end cover is properly mounted, the CJ-series PLC may not function properly.

■ Reference Manuals

Please be sure to read the related user manuals in order to use the PLC safely and properly. Be sure you are using the most current version of the manual.

Model/Manual name		Cat No.
CJ1W-NC□81/□82	Position Control Unit Operation Manual	W487
NJ Series	CPU Unit Built-in EtherCAT Port User's Manual	W505
E3X-ECT	E3X-ECT Operation Manual	E413

Suitability for Use

THE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES.
Please refer to separate catalogs for OMRON's safety rated products.

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.
Know and observe all prohibitions of use applicable to this product.

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 PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
See also Product catalog for Warranty and Limitation of Liability.

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