



---

## Safety Guidelines

---

Thank you for purchasing the NZ2DL BOX Data Logger.  
Prior to use, please read this and relevant manuals thoroughly to fully understand the product.

MODEL	NZ2DL-U-HW
MODEL CODE	13J294
IB(NA)-0800521-F(2109)KWIX	

## SAFETY PRECAUTIONS

---

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

In this manual, the safety precautions are classified into two levels: "⚠️ WARNING" and "⚠️ CAUTION".



### WARNING

Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

---



### CAUTION

Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

---

Under some circumstances, failure to observe the precautions given under "⚠️ CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

### [Design Precautions]

---



### WARNING

- Configure safety circuits external to BOX Data Logger to ensure that the entire system operates safely even when a fault occurs in the external power supply or BOX Data Logger. Failure to do so may result in an accident due to an incorrect output or malfunction. The output may remain ON or OFF due to a failure of the output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
  - In an error output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
-

## [Design Precautions]

---

### CAUTION

- BOX Data Logger must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block.
  - Do not bundle Ethernet cable, RS-232 cable, and UPS connect/external trigger input/I/O cable for error output with the main circuit and the power cables, and do not install them close to each other. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
  - During control of lamp load, heater, solenoid valve using the error output function, a large current (approximately ten times greater than normal) may flow when the output is turned ON. Therefore, design the system that has a sufficient current rating.
  - The time to start BOX Data Logger operation after powering BOX Data Logger ON, or power BOX Data Logger ON without inserting a CompactFlash card and then insert a CompactFlash card with setting files to BOX Data Logger varies depending on the system configuration and CompactFlash card capacity, etc. Design circuits so that the entire system will always operate safely, regardless of the time.
  - During registering each setting, do not power OFF or reset BOX Data Logger. Otherwise, data in the CompactFlash card will be undefined, therefore, resetting and re-registering data will be required. This may also cause BOX Data Logger failure or malfunctions.
- 

## [Security Precautions]

---

### WARNING

- To maintain the safety of BOX Data Logger against unauthorized access from external devices via the network, take appropriate measures. Also, to maintain the safety of BOX Data Logger against unauthorized access from external devices via internet, take security measures such as a firewall.
- 

## [Installation Precautions]

---

### WARNING

- Before installing BOX Data Logger, be sure to shut off all phases of external power supply used by BOX Data Logger. Failure to do so may cause product damage.
-

## [Installation Precautions]

---

### CAUTION

- Use BOX Data Logger in an environment that meets the general specifications in the user's manual. Using BOX Data Logger in any other operating environments may cause electric shocks, fires or malfunctions, or may damage or degrade the module.
- When installing BOX Data Logger, be sure to shut off all phases of external power supply used by BOX Data Logger. Failure to do so may cause product damage.
- Do not directly touch any conductive part or electronic component of BOX Data Logger. Doing so may cause malfunction or failure of BOX Data Logger.
- Tighten the screws of BOX Data Logger with the specified torque. If the screws are loose, it may cause BOX Data Logger to short-circuit, malfunction or fall off. If the screws are tightened excessively, it may damage the screws or BOX Data Logger and cause short-circuit, malfunction or fall off.
- Prevent foreign matter such as dust or wire chips from entering BOX Data Logger. Such foreign matter may cause fire, failure, or malfunctions.
- A protective sheet is pasted on the upper part of BOX Data Logger in order to prevent foreign matter such as wire chips to get inside BOX Data Logger while installing and wiring. Do not remove this protective sheet during installation and wiring work. However, be sure to remove the protective sheet before operating BOX Data Logger to allow heat radiation during operation.
- Push a CompactFlash card into the CompactFlash card slot and insert it securely. After installing the CompactFlash card, check that it is inserted securely. Failure to do so may cause malfunctions due to poor contact.

## [Wiring Precautions]

---

### WARNING

- Before wiring, be sure to shut off all phases of external power supply used by BOX Data Logger. Failure to do so may cause product damage.
-

### CAUTION

- Individually ground the FG and LG terminals of BOX Data Logger with a ground resistance of 100Ω or less. Failure to do so may result in electric shock or malfunction.
  - A protective sheet is pasted on the upper part of BOX Data Logger in order to prevent foreign matter such as wire chips to get inside BOX Data Logger while installing and wiring. Do not remove this protective sheet during installation and wiring work. However, be sure to remove it before operating the system to allow heat radiation during operation.
  - Check the rated voltage and terminal layout before wiring to BOX Data Logger, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
  - Before connecting Ethernet cable, RS-232 cable, UPS connect/external trigger input/I/O cable for error output, or power cable, confirm that the type of interface to be connected is correct. Connecting a wrong interface or incorrect wiring causes failure of the external equipment or BOX Data Logger.
  - Ethernet cables, RS-232 cables, UPS connection/external trigger input/I/O cables for error output to be connected to BOX Data Logger must be correctly crimped, pressed, or soldered with the specified tools by using a crimping terminal or a connector in conformance to BOX Data Logger specification. Incomplete connection may cause short-circuit, fire, or malfunction. Do not use spade solderless terminals as power cable solderless terminals. Doing so may cause fall off if the screws get loose, resulting in failure.
  - Tighten the screws using the specified torque. If the screws are loose, it may cause BOX Data Logger to short-circuit, malfunction or fall off. If the screws are tightened excessively, it may damage the screws or BOX Data Logger and cause short-circuit, malfunction or fall off.
  - Connect Ethernet cable, RS-232 cable, UPS connection/external trigger input/I/O cable for error output, and power cable to BOX Data Logger securely. Failure to do so may cause malfunction.
  - Make sure to place Ethernet cable, RS-232 cable, UPS connect/external trigger input/I/O cable for error output, and power cable to be connected to BOX Data Logger in a duct or fasten them using a clamp. If the cables are not placed in a duct or fastened with a clamp, their positions may be unstable or moved, and they may be pulled inadvertently. This may damage BOX Data Logger and the cables or cause the module to malfunction because of faulty cable connections.
  - When disconnecting Ethernet cables, RS-232 cable, UPS connection/external trigger input/I/O cable for error output, and power cables from BOX Data Logger, do not pull the cables by hand. For Ethernet cables and RS-232 cable, hold the connector part connected to BOX Data Logger and release a latch to remove the cable. For UPS connection/external trigger input/I/O cable for error output, and power cable, inset the dedicated tool in the spring cage and loosen the spring to remove the cable. Before removing the power cables connected to the terminal blocks, loosen the terminal screws. Pulling the cable connected to BOX Data Logger may result in malfunction or damage to BOX Data Logger or cable.
-

## [Startup and Maintenance Precautions]

---

### **WARNING**

- Do not touch any terminals, other conductive parts or electronics during energization. Doing so may cause electric shock, malfunction or failure of BOX Data Logger.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so may cause the battery to generate heat, explode, ignite, or leak, resulting in injury or fire.
- Shut off the external power supply (all phases) used in BOX Data Logger before cleaning BOX Data Logger, or retightening the fixing screws of BOX Data Logger or power terminal screws. Failure to do so may damage BOX Data Logger or cause failure or malfunction. Tighten the screws using the specified torque. If the screws are loose, it may cause BOX Data Logger to short-circuit, malfunction or fall off. If the screws are tightened excessively, it may damage the screws or BOX Data Logger and cause short-circuit, malfunction or fall off.

## [Startup and Maintenance Precautions]

---

### **CAUTION**

- Start up and maintenance of BOX Data Logger must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel in order not to operate by the operator except the maintenance personnel.
- Before handling BOX Data Logger, touch a grounded metal object to discharge the static electricity from your body. Failure to do so may cause a failure or malfunction of BOX Data Logger.
- Do not drop or apply shock to the battery to be installed in BOX Data Logger. Doing so may damage the battery, causing battery fluid leakage inside the battery. If the battery is dropped or any shock is applied to it, do not use and dispose of it.
- Do not disassemble or transform BOX Data Logger. Doing so may cause a failure, malfunctions, personal injuries, or a fire.

## [Operating Precautions]

---

### **WARNING**

- Be sure to close the terminal cover while BOX Data Logger is in operation. Failure to do so may result in electric shock.
- Do not touch the terminals, any conductive part, or electronic component of BOX Data Logger directly while applying a current. Doing so may cause malfunction or failure of BOX Data Logger.

## [Operating Precautions]

---

### **CAUTION**

- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away in all directions from BOX Data Logger. Failure to do so may cause malfunction.

## [Disposal Precautions]

---

### CAUTION

- Dispose of BOX Data Logger as an industrial waste.
- When disposing of batteries, separate them from other wastes according to the local regulations. In EU member states, there is a separate collection system for waste batteries. Dispose of batteries properly at the local community waste collection/recycling center. The following symbol is printed on the packaging of batteries used for BOX Data Logger. The symbol is specified in the new EU Battery Directive (2006/66/EC) Article 20 "Information for end-users" and Annex II. The symbol indicates that batteries need to be disposed of separately from other wastes.



Note: This symbol is for EU member states only.

## [Transportation Precautions]

---

### CAUTION

- The lithium battery (Q6BAT) is mounted on BOX Data Logger. When transporting BOX Data Loggers, make sure to treat them based on the transport regulations. Products are packed properly in compliance with the transportation regulations prior to shipment. When repacking any of the unpacked products to transport it to another location, make sure to observe the IATA Dangerous Goods Regulations, IMDG Code, and other local transportation regulations. The battery (Q6BAT) of BOX Data Logger is a lithium battery, and it classified as non-dangerous goods. For details, please consult your transportation company.
  - The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the product. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.
-

## SAFETY PRECAUTIONS

---

*(Lire ces précautions avant toute utilisation du produit.)*

*Avant d'utiliser ce produit, lire attentivement ce manuel ainsi que les manuels auxquels il renvoie, et toujours considérer la sécurité comme de la plus haute importance en manipulant le produit correctement.*

*Dans ce manuel, les précautions de sécurité sont classées en deux niveaux, à savoir : "⚠️ AVERTISSEMENT" and "⚠️ ATTENTION".*

---



### **AVERTISSEMENT**

*Attire l'attention sur le fait qu'une négligence peut créer une situation de danger avec risque de mort ou de blessures graves.*

---



### **ATTENTION**

*Attire l'attention sur le fait qu'une négligence peut créer une situation de danger avec risque de blessures légères ou de gravité moyennes ou risque de dégâts matériels.*

---

*Dans certaines circonstances, le non-respect d'une précaution de sécurité introduite sous le titre "ATTENTION" peut avoir des conséquences graves.*

*Les précautions de ces deux niveaux doivent être observées dans leur intégralité car elles ont trait à la sécurité des personnes et aussi du système.*

*Veiller à ce que les utilisateurs finaux lisent ce manuel qui doit être conservé soigneusement à portée de main pour s'y référer autant que de besoin.*

### **[Précautions lors de la conception]**

---



### **AVERTISSEMENT**

- *Configurer les circuits de sécurité à l'extérieur de l'enregistreur de données BOX pour que l'ensemble du système reste en sécurité même après survenance d'une anomalie dans l'alimentation externe ou dans l'enregistreur de données BOX. Faute de quoi, une instruction de sortie incorrecte ou un dysfonctionnement pourrait être à l'origine d'un accident. Selon la nature de la panne du circuit de sortie, la sortie peut rester active ou inactive. Configurer un circuit de surveillance externe pour le suivi des signaux de sortie susceptibles de provoquer un accident grave.*
  - *Dans un circuit de sortie d'erreur, si le courant de charge excède la valeur nominale ou si une surintensité causée par un court-circuit à la charge persiste longtemps, il peut en résulter un dégagement de fumée avec départ de feu. Pour éviter cela, il faut configurer un circuit de sécurité, avec un fusible par exemple.*
  - *Prendre les mesures appropriées pour maintenir la sécurité de l'enregistreur de données BOX en cas d'accès non autorisé d'un dispositif externe via le réseau. De plus, pour maintenir la sécurité de l'enregistreur de données BOX en cas d'accès non autorisé d'un dispositif externe via Internet, prendre des mesures adéquates du genre coupe-feu.*
-



## **[Précautions lors de la conception]**

---

### **ATTENTION**

- L'enregistreur de données BOX doit être installé dans un tableau de commande.  
Raccorder l'alimentation principale à l'enregistreur de données BOX installé dans le tableau de commande via un bornier à relais.
- Ne pas grouper les câbles Ethernet, le câble RS-232, le câble de connexion UPS/d'entrée de déclenchement/ de E/S pour connexion de sortie d'erreur avec les lignes des circuits principaux ou les câbles d'alimentation. Les installer en maintenant entre eux une distance minimum de 100 mm. Faute de quoi, il y a risque de dysfonctionnement par un bruit.
- Lorsque le module de sortie commande un dispositif comme une lampe, un réchauffeur ou une électrovanne, un fort courant (jusqu'à 10 fois l'intensité normale) traverse la sortie quand celle-ci passe de OFF à ON. Configurer le système avec une capacité de courant suffisante.
- Le temps nécessaire au démarrage de l'enregistreur de données BOX après sa mise sous tension, ou partir du moment où on introduit la carte CompactFlash contenant les fichiers de paramétrage dans l'enregistreur déjà sous tension, est variable en fonction de la configuration du système, de la capacité de la carte CompactFlash, etc. Concevoir les circuits de manière que tout le système fonctionne en sécurité, indépendamment de ce temps.
- Pendant l'enregistrement des réglages, ne pas mettre hors tension ou réinitialiser l'enregistreur de données BOX. Sinon, les données de réglage dans l'enregistreur de données BOX ou en carte CompactFlash peut être imprécises. Il est donc nécessaire de réinitialiser et de ré-enregistrer les données. Cela pourrait être à l'origine d'une panne ou d'un dysfonctionnement de l'enregistreur de données BOX.

## **[Précautions d'installation]**

---

### **AVERTISSEMENT**

- Avant d'installer l'enregistreur de données BOX, toujours couper l'alimentation externe de l'enregistreur de données BOX sur toutes les phases. Faute de quoi, il y a risque d'électrocution et d'endommagement du produit.
-

## **[Précautions d'installation]**

---

### **ATTENTION**

- Utiliser l'enregistreur de données BOX dans un environnement conforme aux spécifications générales présentées dans le manuel de l'utilisateur. L'utilisation de l'enregistreur de données BOX dans tout autre environnement pourrait être à l'origine de chocs électriques ou d'un départ de feu, ou de l'endommagement et de la détérioration du module.
- Avant d'installer l'enregistreur de données BOX, toujours couper l'alimentation externe de l'enregistreur de données BOX sur toutes les phases. Faute de quoi, il y a risque d'endommagement du produit.
- Éviter tout contact direct avec les parties conductrices et les composants électroniques de l'enregistreur de données BOX. Faute de quoi, il y a risque de dysfonctionnement ou panne.
- Les vis doivent toujours être serrées au couple prescrit. Des vis desserrées peuvent être à l'origine d'un court-circuit, d'un dysfonctionnement ou d'une chute de l'enregistreur de données BOX. Un serrage excessif peut endommager les vis et être à l'origine d'un court-circuit, d'un dysfonctionnement ou d'une chute de l'enregistreur de données BOX.
- Veiller à ne laisser pénétrer aucun corps étrangers comme des débris de câblage dans l'enregistreur de données BOX. Cela pourrait être à l'origine d'un départ de feu, d'une panne du module ou de dysfonctionnement.
- La partie supérieure de l'enregistreur de données BOX est recouverte d'une feuille de protection autocollante pour éviter toute pénétration de corps étrangers comme des copeaux métalliques pendant le câblage. Ne pas retirer le film protecteur avant de terminer le câblage. Cependant, ne pas oublier de retirer le film protecteur avant de mettre l'enregistreur de données BOX en marche pour permettre une bonne dissipation de la chaleur.
- Introduire la carte CompactFlash dans la fente pour carte CompactFlash en la poussant bien à fond. Après installation de la carte CompactFlash, vérifier qu'elle a bien pris sa place. Faute de quoi, un mauvais contact pourrait être à l'origine de dysfonctionnements.

## **[Précautions de câblage]**

---

### **AVERTISSEMENT**

- Avant d'entreprendre le câblage de l'enregistreur de données BOX, toujours couper l'alimentation externe de l'enregistreur sur toutes les phases. Faute de quoi, il y a risque d'électrocution et d'endommagement du produit.

## **[Précautions de câblage]**

---

### **ATTENTION**

- Pour les bornes FG et LG, la mise à la terre doit être mieux que de classe D (mise à la terre de troisième classe). Faute de quoi, il y a risque d'électrocution et de dysfonctionnement.

### ATTENTION

- La partie supérieure de l'enregistreur de données BOX est recouverte d'une feuille de protection autocollante pour éviter toute pénétration de corps étrangers comme des copeaux métalliques pendant le câblage. Ne pas retirer le film protecteur avant de terminer le câblage. Cependant, ne pas oublier de retirer le film protecteur avant de mettre le module en marche pour permettre une bonne dissipation de la chaleur.
- Vérifier la tension nominale et l'affectation des bornes avant le câblage de l'enregistreur de données BOX et raccorder les câbles correctement. Le raccordement d'une alimentation de tension nominale erronée ou une erreur de câblage peut être à l'origine d'un départ de feu ou d'une panne.
- Avant de raccorder des câbles Ethernet, câble RS-232, câbles de connexion UPS/d'entrée de déclenchement/ de E/S des câbles d'alimentation, s'assurer que le type d'interface à raccorder est correct. Le raccordement d'une interface erronée ou une erreur de câblage peut être à l'origine de pannes des dispositifs externes.
- Les câbles Ethernet, le câble RS-232, le câble de connexion UPS/d'entrée de déclenchement/ de E/S pour connexion de sortie d'erreur doivent être raccorder à l'enregistreur de données BOX en les sertissant avec l'outil prescrit par le fabricant ou, à défaut, ils doivent être correctement brasés. Une connexion imparfaite pourrait mettre le module en état de court-circuit et être à l'origine d'un départ de feu ou de dysfonctionnements. Comme bornes sans soudure de câble d'alimentation, ne pas utiliser des bornes sans soudure de type embrochable. La chute de vis desserrées peut être à l'origine d'une panne.
- Les vis doivent toujours être serrées au couple prescrit. Des vis desserrées peuvent être à l'origine d'un court-circuit, d'un dysfonctionnement ou d'une chute du module. Un serrage excessif peut endommager les vis et être à l'origine d'un court-circuit, d'un dysfonctionnement ou d'une chute du module.
- Raccorder fermement sur l'enregistreur de données BOX les câbles Ethernet, le câble RS-232, le câble de connexion UPS/d'entrée de déclenchement/ de E/S et le câble d'alimentation. Une connexion imparfaite peut être à l'origine de dysfonctionnements.
- Les câbles Ethernet, le câble RS-232, le câble de connexion UPS/d'entrée de déclenchement/ de E/S pour connexion de sortie d'erreur, ainsi que le câble d'alimentation raccordés à l'enregistreur de données BOX doivent être placés dans un conduit ou doivent être attachés. Si les câbles ne sont pas sous gaine ou ne sont pas attachés, ils risquent d'être déplacés ou arrachés par inadvertance. Cela pourrait endommager l'enregistreur de données BOX ou les câbles ou être à l'origine de dysfonctionnements s'il y a faux contact.
- Pour débrancher de l'enregistreur de données BOX les câbles Ethernet, le câble RS-232, le câble de connexion UPS / d'entrée de déclenchement / de E/S ou le câble d'alimentation, ne jamais tirer sur le câble proprement dit. Pour débrancher les câbles Ethernet et le câble RS-232, les saisir par le connecteur raccordé à l'enregistreur de données BOX et déverrouiller le loquet. Pour débrancher le câble de connexion UPS/ entrée de déclenchement externe: et E/S pour sortie d'erreur, insérer l'outil spécial dans la cage à ressort pour détendre le ressort. Pour un câble d'alimentation raccordé à un bornier, desserrer les vis des bornes avant de l'enlever. Tout effort de traction sur un câble raccordé à l'enregistreur de données BOX risque d'endommager l'enregistreur ou le câble et peut être à l'origine de dysfonctionnements.

## **[Précautions de démarrage et de maintenance]**

---

### **⚠ AVERTISSEMENT**

- *Ne toucher à aucune des parties conductrices ou composants électroniques de l'enregistreur de données BOX quand il est sous tension. Faute de quoi, il y a risque d'électrocutions, de dysfonctionnements ou de pannes.*
- *Raccorder correctement le connecteur des piles. Les piles ne doivent pas être rechargées, démontées, court-circuitées ou soudées. Elles ne doivent pas non plus être jetées au feu. De plus, ne pas les exposer à des liquides ou à des chocs violents. Cela pourrait entraîner une surchauffe ou un éclatement de la pile qui pourrait s'enflammer et être à l'origine de blessures ou d'un départ de feu.*
- *Avant toute intervention de maintenance comme le nettoyage, le contrôle des vis de fixation de l'enregistreur de données BOX ou le resserrage des vis des bornes, toujours couper l'alimentation externe de l'enregistreur de données BOX sur toutes les phases. Faute de quoi, il y aurait risque de panne, de dysfonctionnement ou d'endommagement de l'enregistreur de données BOX. Les vis doivent toujours être serrées au couple prescrit. Des vis desserrées peuvent être à l'origine d'un court-circuit, d'un dysfonctionnement ou d'une chute du module. Un serrage excessif peut endommager les vis et être à l'origine d'un court-circuit, d'un dysfonctionnement ou d'une chute du module.*

## **[Précautions de démarrage et de maintenance]**

---

### **⚠ ATTENTION**

- *La mise en service et la maintenance de l'enregistreur de données BOX doivent être effectuées par un personnel de maintenance qualifié et formé à la protection contre les chocs électriques. Le tableau de commande doit être fermé à clé pour que les opérateurs, hormis le personnel de maintenance, ne puissent y accéder.*
- *Avant de manipuler l'enregistreur de données BOX, se débarrasser de la charge électrostatique qu'accumule le corps humain en touchant un objet conducteur comme une barre de mise à la terre. Faute de quoi, il y aurait risque de panne ou de dysfonctionnement de l'enregistreur de données BOX.*
- *Ne pas faire tomber ou soumettre à de forts chocs les piles à installer dans les modules. Cela pourrait endommager les piles, avec risque de fuite du liquide à l'intérieur des piles. Toute pile qu'on a laissé tomber ou qui a subi un choc violent doit être jetée avant usage.*
- *Ne pas démonter ni modifier l'enregistreur de données BOX. Cela pourrait être à l'origine de pannes, de dysfonctionnements, de blessures aux personnes ou d'un départ de feu.*

## **[Précautions d'utilisation]**

---

### **⚠ AVERTISSEMENT**

- *Le couvre-bornes doit toujours être fermé quand l'enregistreur de données BOX est en service. Faute de quoi, il y a risque d'électrocution.*
- *Ne toucher à aucune des parties conductrices ou composants électroniques de l'enregistreur de données BOX quand il est sous tension. Ceci pourrait être à l'origine de dysfonctionnements ou de pannes du l'enregistreur de données BOX.*

## **[Précautions d'utilisation]**

---

### **! ATTENTION**

- *Tout type d'appareil de communication radio, y compris les téléphones portables et les appareils PHS (Personal handy-phone system), doit être tenu éloigné de plus de 25 cm (9,85 pouces) de l'enregistreur de données BOX, dans tous les sens. Le non-respect de cette précaution expose à des dysfonctionnements.*
- 

## **[Précautions de mise au rebut]**

---

### **! ATTENTION**

- *Pour la mise au rebut, traiter l'enregistreur de données BOX comme un déchet industriel.*
- *Les piles ou batteries doivent être mises au rebut séparément des autres déchets et conformément à la réglementation locale. Dans les états membres de l'UE, il existe pour les piles usagées un système de collecte distinct des autres déchets. Mettre les piles et batteries au rebut correctement en les déposant à la déchetterie/centre de recyclage local. Les batteries, les emballages de batterie et les appareils incluant une batteries qui s'utilisent avec l'enregistreur de données BOX portent le logo suivant. Ce logo a été instauré par la nouvelle directive EU sur les piles et batteries (2006/66/EC), Article 20 "Information au utilisateurs finaux" et Annexe II. Le logo signifie que les batteries doivent être mises au rebut séparément des autres déchets.*



*Ce logo ne concerne que les états membres de l'UE.*

---

 **ATTENTION**

---

- *La batterie au lithium (Q6BAT) est installée dans l'enregistreur de données BOX. Pour le transport des enregistreurs de données BOX, respecter la réglementation afférente à ce transport. Avant expédition, les produits sont convenablement emballés conformément à la réglementation des transports. Quand on remballé des produits déballés pour les transporter sur un autre site, toujours respecter la réglementation IATA et les autres réglementations locales applicables au transport des marchandises dangereuses. La batterie (Q68AT) de l'enregistreur de données BOX est une batterie au lithium classée dans la catégorie des produits non dangereux. Pour le détail, prière de prendre contact avec le transporteur.*
  - *Les halogènes (comme le fluore, le chlore, le brome ou l'iode) contenus dans certains fumigènes de désinfection et de traitement antiparasite des emballage en bois peuvent de détérioration du produit. Protéger le produit contre la pénétration des résidus de fumigènes ou envisager d'autres méthodes de traitement que la fumigation (traitement thermique par exemple). Une désinfection et un traitement antiparasite doivent être appliqués sur le bois brut avant façonnage.*
-

## CONDITIONS OF USE FOR THE PRODUCT

---

- (1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
- where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
  - where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
- mitsubishi electric shall have no responsibility or liability (including, but not limited to any and all responsibility or liability based on contract, warranty, tort, product liability) for any injury or death to persons or loss or damage to property caused by the product that are operated or used in application not intended or excluded by instructions, precautions, or warning contained in Mitsubishi Electric user's, instruction and/or safety manuals, technical bulletins and guidelines for the product.
- ("Prohibited Application")
- Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
  - Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
  - Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.
- Notwithstanding the above restrictions, Mitsubishi Electric may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi Electric and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTS are required. For details, please contact the Mitsubishi Electric representative in your region.
- (3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

# CONTENTS

SAFETY PRECAUTIONS .....	1
CONDITIONS OF USE FOR THE PRODUCT .....	14
RELEVANT MANUALS .....	16
TERMS .....	16
<b>1 OVERVIEW</b> .....	<b>17</b>
1.1 Checking the included items .....	17
<b>2 GENERAL SPECIFICATIONS</b> .....	<b>18</b>
<b>3 EMC AND LOW VOLTAGE DIRECTIVES</b> .....	<b>19</b>
3.1 Measures to Comply with the EMC Directive .....	19
3.2 Measures to Comply with the Low Voltage Directive .....	24
<b>4 INSTALLATION AND WIRING</b> .....	<b>25</b>
4.1 Installation .....	25
4.2 Wiring .....	25
REVISIONS .....	33
WARRANTY .....	34
TRADEMARKS .....	35



## RELEVANT MANUALS

Manual name [manual number]	Available form
Safety Guidelines [IB-0800521](this manual)	Print book
	PDF
BOX Data Logger User's Manual [SH-081216ENG]	Print book
	PDF

## TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
BOX Data Logger	An abbreviation for NZ2DL BOX Data Logger.
BOX Data Logger configuration tool	This tool configures and maintains BOX Data Logger.(model: SW1DNN-NLUTL) The tool is built into BOX Data Logger.

# 1 OVERVIEW

---

This manual explains the precautions for use BOX Data Logger safely.

## 1.1 Checking the included items

---

The following items are included in the package of this product. Check that all the items are included before using the product.

Item	Quantity
NZ2DL	1
Battery (Q6BAT)	1
This manual	1

## 2 GENERAL SPECIFICATIONS

This chapter describes the general specifications of the BOX Data Logger.

Item	Specifications					
Operating ambient temperature <i>Température ambiante de fonctionnement</i>	0 to 55°C 0 à 55 °C					
Storage ambient temperature	-25 to 75°C					
Operating ambient humidity	5 to 95%RH, non-condensing					
Storage ambient humidity	5 to 95%RH, non-condensing					
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2	—	Frequency	Constant acceleration	Half amplitude	Sweep count
		Under intermittent vibration	5 to 8.4Hz	—	3.5mm	10 times each in X, Y, and Z directions
			8.4 to 150Hz	9.8m/s <sup>2</sup>	—	
		Under continuous vibration	5 to 8.4Hz	—	1.75mm	—
8.4 to 150Hz	4.9m/s <sup>2</sup>		—			
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s <sup>2</sup> , 3 times each in X, Y, and Z bidirections)					
Operating atmosphere	No corrosive gases					
Operating altitude* <sup>1</sup>	0 to 2000m* <sup>4</sup>					
Installation location	Inside a control panel					
Overvoltage category* <sup>2</sup>	II or less					
Pollution degree* <sup>3</sup>	2 or less					
Equipment class	Class I					

\*1 Do not use or store the BOX Data Logger under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction. When using the BOX Data Logger under pressure, please consult your local Mitsubishi representative.

\*2 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

\*3 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution degree 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

\*4 When the BOX Data Logger is used at altitude above 2000m, the withstand voltage performance and the upper limit of the operating ambient temperature decrease. Please consult your local Mitsubishi representative.

## 3 EMC AND LOW VOLTAGE DIRECTIVES

In each country, regulations concerning electromagnetic compatibility (EMC) and electrical safety are enacted.

For the products sold in the European countries, compliance with the EU's EMC Directive has been a legal obligation as EMC regulation since 1996, as well as the EU's Low Voltage Directive as electrical safety regulation since 1997.

Manufacturers who recognize their products are compliant to the EMC and Low Voltage Directives are required to attach a "CE marking" on their products in European countries.

In some other countries and regions, manufacturers are required to make their products compliant with applicable laws or regulations and attach a certification mark on the products as well (such as UK Conformity Assessed (UKCA) marking in the UK, and Korea Certification (KC) marking in South Korea).

Each country works to make their regulatory requirements consistent across countries based on international standards. When the requirements are consistent, measures to comply with the EMC and electrical safety regulations become common across countries.

The UK and South Korea have enacted EMC regulations whose requirements are consistent with those of the EMC Directive.

The UK has also enacted electrical safety regulations whose requirements are consistent with those of the Low Voltage Directive. In this section, the requirements of the EMC and Low Voltage Directives are described as examples of those of the EMC and electrical safety regulations.

### 3.1 Measures to Comply with the EMC Directive

The EMC Directive sets requirements for emission (conducted and radiated electromagnetic interference emitted by a product) and immunity (the ability of a product not to be influenced by externally generated electromagnetic interference).

This section describes the precautions for machinery constructed with the BOX Data Logger to comply with the EMC Directive.

These precautions are based on the requirements of the EMC Directive and the harmonized standards. However, they do not guarantee that the entire machinery constructed according to the descriptions complies with the EMC Directive.

The manufacturer of the machinery must determine the testing method for compliance and declare conformity to the EMC Directive.

#### EMC Directive related standards

##### ■ Emission requirements

Standard: EN61131-2:2007

Test item	Test description	Value specified in standard
CISPR16-2-3 Radiated emission <sup>*2</sup>	The electromagnetic wave emitted by the product to the external space is measured.	<ul style="list-style-type: none"><li>• 30 to 230MHz, QP: 40dB<math>\mu</math>V/m (measured at 10m distance)<sup>*1</sup></li><li>• 230 to 1000MHz, QP: 47dB<math>\mu</math>V/m (measured at 10m distance)</li></ul>
CISPR16-2-1, CISPR16-1-2 Conducted emission <sup>*2</sup>	The noise level which the product emits to the power line is measured.	<ul style="list-style-type: none"><li>• 0.15 to 0.5MHz, QP: 79dB, Mean: 66dB<sup>*1</sup></li><li>• 0.5 to 30MHz, QP: 73dB, Mean: 60dB</li></ul>

\*1 QP: Quasi-Peak value, Mean: Average value

\*2 BOX Data Logger is an open-type device intended to be placed in a conductive control panel or similar type of enclosure. The tests were conducted with the programmable controller installed in a control panel, applying

the maximum rated input voltage of the power supply module.

## ■ Immunity requirements

Standard: EN61131-2:2007

Test item	Test description	Value specified in standard
EN61000-4-2 Electrostatic discharge immunity <sup>*1</sup>	An electrostatic discharge is applied to the enclosure of the equipment.	<ul style="list-style-type: none"> <li>• 8kV: Air discharge</li> <li>• 4kV: Contact discharge</li> </ul>
EN61000-4-3 Radiated, radio-frequency, electromagnetic field immunity <sup>*1</sup>	An electric field is radiated to the product.	80% AM modulation @1kHz <ul style="list-style-type: none"> <li>• 80 to 1000MHz: 10Vm</li> <li>• 1.4 to 2.0GHz: 3Vm</li> <li>• 2.0 to 2.7GHz: 1Vm</li> </ul>
EN61000-4-4 Fast transient burst immunity <sup>*1</sup>	Burst noise is applied to power lines and signal lines.	<ul style="list-style-type: none"> <li>• AC/DC power, I/O power, and AC I/O (unshielded) lines: 2kV</li> <li>• DC I/O, analog, and communication lines: 1kV</li> </ul>
EN61000-4-5 Surge immunity <sup>*1</sup>	Lightning surge is applied to power lines and signal lines.	<ul style="list-style-type: none"> <li>• AC power, AC I/O power, and AC I/O (unshielded) lines: 2kV CM, 1kV DM</li> <li>• DC power and DC I/O power lines: 0.5kV CM, 0.5kV DM</li> <li>• DC I/O, AC I/O (shielded), analog, and communication lines: 1kV CM</li> </ul>
EN61000-4-6 Conducted RF immunity <sup>*1</sup>	High-frequency noise is applied to power lines and signal lines.	0.15 to 80MHz, 80% AM modulation@1kHz, 10Vrms
EN61000-4-8 Power-frequency magnetic field immunity <sup>*1</sup>	The product is immersed in the magnetic field of an induction coil.	50/60Hz, 30A/m
EN61000-4-11 Voltage dips and interruption immunity <sup>*1</sup>	Power voltage is momentarily interrupted.	<ul style="list-style-type: none"> <li>• 0%, 0.5 period, starting at zero-crossing</li> <li>• 0%, 250/300 period (50/60Hz)</li> <li>• 40%, 10/12 period (50/60Hz)</li> <li>• 70%, 25/30 period (50/60Hz)</li> </ul>

\*1 BOX Data Logger is an open-type device intended to be placed in a conductive control panel or similar type of enclosure. The tests were conducted with the BOX Data Logger installed in a control panel.

## Installation in a control panel

BOX Data Logger is an open-type device intended to be placed in a conductive control panel or similar type of enclosure.

Remote modules on each network must be also installed inside the control panel. Waterproof type remote modules can be installed outside the control panel.

This ensures safety as well as effective shielding of electromagnetic noise emitted from the BOX Data Logger.

### ■ Control panel

- Use a conductive control panel.
- Mask off an area used for grounding in advance.
- To ensure electrical contact between inner plates and the control panel, mask off the bolt installation areas of each inner plate so that conductivity can be ensured in the largest area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Keep the diameter of the holes on the control panel to 10cm or less. If the diameter is larger than 10cm, electromagnetic wave may leak. In addition, because electromagnetic wave leaks through a clearance between the control panel and its door, reduce the clearance as much as

possible. Use of EMI gaskets (sealing the clearance) can suppress undesired radiated emissions.

The tests were conducted by Mitsubishi Electric Corporation using a control panel having damping characteristics of 37dB (maximum) and 30dB (average) (measured at 3m distance, 30 to 300MHz).

### ■ Power cable and ground cable

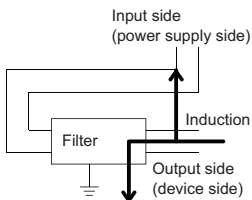
- Provide a ground point to the control panel near the power supply module. Ground the LG and FG terminals of the power supply module to the ground point with the thickest and shortest ground cable possible (2mm<sup>2</sup>, 30cm or shorter).
- Twist the ground cable extended from the ground point with the power cable so that larger amount of noise generated from the power cable is absorbed to the ground. Note that if a noise filter is attached to the power cable, twisting may not be required.

### ■ Noise filter (power supply line filter)

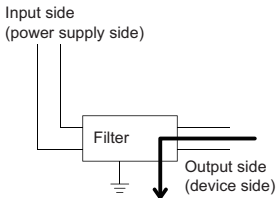
A noise filter is effective for reducing conducted noise in the 10MHz or less frequency band. (Use of a noise filter can suppress noise.)

The following are the installation precautions.

- Do not bundle the cables on the input side and output side of the noise filter. If bundled, the noise on the output side is induced into the filtered cable on the input side.



- Problematic example  
Noise is induced when the input and output cables are bundled.



- Modification example  
Install the input and output cables separately.

- Ground the ground terminal of the noise filter to the ground point of the control panel with the shortest cable possible (approximately 10cm).

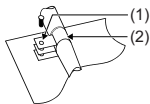
## Cables extended out of the control panel

Use a shielded cable for a cable extended out of the control panel such as an I/O signal line (including a common line) and cable for communications.

If a shielded cable is not used or not grounded properly, the noise immunity will not meet the requirement.

### ■ Grounding a shielded cable

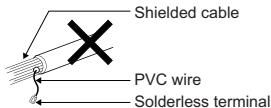
- Ground the shield of a shielded cable as close to the module as possible so that the grounded cable will not be affected by electromagnetic induction from ungrounded cables.
- Ground the exposed shield to a large area on the control panel. A clamp can be used as shown below. In this case, mask off the inner wall surface of the control panel, which comes in contact with the clamp.



- (1) Paint mask
- (2) Clamp

### Point

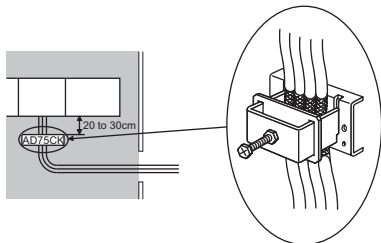
Do not use the tip of a PVC wire soldered onto a shield of the shielded cable for grounding. Doing so will raise the high-frequency impedance, resulting in loss of the shielding effect.





### ■ Grounding cables with a cable clamp

Use shielded cables for external wiring and ground the shields of the shielded cables to the control panel with an AD75CK cable clamp (manufactured by Mitsubishi). Ground the shields within 20 to 30cm from the module.



For details on the AD75CK, refer to the following.

📖 AD75CK-type Cable Clamping Instruction Manual

### ■ Ferrite core

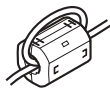
A ferrite core is effective for reducing radiated noise in the 30MHz to 100MHz frequency band. It is recommended to install a ferrite core if a shield cable extended out of the control panel does not provide sufficient shielding effects.

Install a ferrite core to the cable in the position just before the cable is extended out of the control panel. If the installation position is not appropriate, the ferrite core will not produce any effect.

Install a ferrite core to each power cable as shown below.

(Ferrite core used for the tests conducted by Mitsubishi: TDK ZCAT3035-1330)

Ex.



## Power supply

### ■ External power supply

For the external power supply terminals for the UPS connection/external trigger input/error output, use the DC power supply compliant to the CE.

Place the DC power supply in the same control panel as the BOX Data Logger. Also the power cable connected to the external power supply should be 30m or shorter.

### ■ Power supply part

Ground the LG and FG terminals after short-circuiting them.

## 3.2 Measures to Comply with the Low Voltage Directive

BOX Data Logger operates at the rated voltage of 24VDC. However, the modules which operate at less than 50VAC/75VDC rated input voltage are not targeted for the Low Voltage Directive compliance.

## 4 INSTALLATION AND WIRING

This chapter explains installation and wiring method of the BOX Data Logger.

### 4.1 Installation

When installing the BOX Data Logger to a control panel or any other place, consider the operability, maintainability, and environmental resistance.

For details, refer to BOX Data Logger User's Manual.

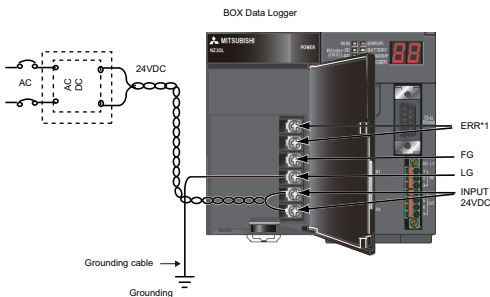
### 4.2 Wiring

#### Wiring of the power supply part

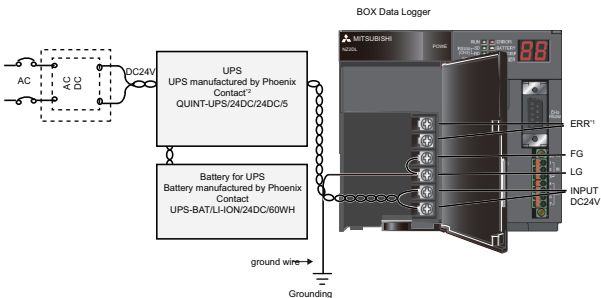
##### ■ Wiring method

Examples of wiring to the power supply part are as follows:

- Wiring example



- Wiring example for UPS connection



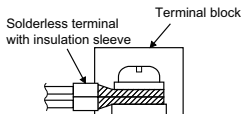
\*1 The ERR. terminal will be OFF (release) when the power is not ON, or BOX Data Logger stop error (including reset) or fuse failure occurs.

\*2 Refer to the specification of UPS when wiring for UPS ground cable.

## ■ Precautions

Take the following precautions when wiring the power supply.

- Considering the rated current and inrush current of BOX Data Logger, connect a circuit breaker having an appropriate sensing property or an external fuse causing proper blowout. (When using BOX Data Logger alone, considering the cable protection, 10 A circuit breaker or external fuse is recommended.)
- To minimize a voltage drop, use thickest possible power cables (up to 2 mm<sup>2</sup>), and connect them in the shortest distance by finely twisting them.
- Do not close or bundle the power cables together with the main circuit lines (high voltage and large current), Ethernet cables, RS-232 cables, and I/O signal cables (including common cable). Keep a distance of 100 mm or more between them.
- After wiring, always attach the included terminal cover to the power supply part, and do not touch any terminals while powering up or operating BOX Data Logger.
- Use a Class 2 power supply for the external power supply which inputs power to the power supply part.
- Use solderless terminals when wiring the terminal block of the power supply part. To prevent short-circuit that may occur when a screw become loose, use a solderless terminal with insulation sleeve, of which thickness is 0.8 mm or less. Up to two solderless terminals can be connected to one terminal block.



- Use UL-approved solderless terminals and, for processing, use a tool recommended by their manufacturer.
- Tighten the terminal screws on the power supply part within the applicable torque range of 0.66 to 0.89N·m.
- *Serre les vis de bornes de la partie alimentation dans les limites du couple prescrit (0,66 à 0,89 N·m).*
- Use the following wires for connection to the power supply part.

Applicable wire size	Material	Temperature rating
0.75 to 2mm <sup>2</sup> (18 to 14AWG) (stranded wire)	Copper	75°C or higher

- *Pour le raccordement de la partie alimentation, utiliser les fils suivants.*

Taille du fil à utiliser	Matériau	Gamme de température
0,75 à 2 mm <sup>2</sup> (18 à 14 AWG) (fil torsadé)	Cuivre	75°C ou mieux

- Inputting a signal of a different voltage level may cause malfunction or failure of the module.
- When supplying power to the power supply part, select a power supply having sufficient power capacity. (Double power capacity or more is recommended.)

### Point

For compliance with the EMC directive, refer to the following section.

☞ Page 19 EMC AND LOW VOLTAGE DIRECTIVES

## Connecting UPS

### ■ Wiring method

Manufactured by Phoenix Contact: An example when connecting QUINT-UPS/24DC/24DC/5 is as follows:

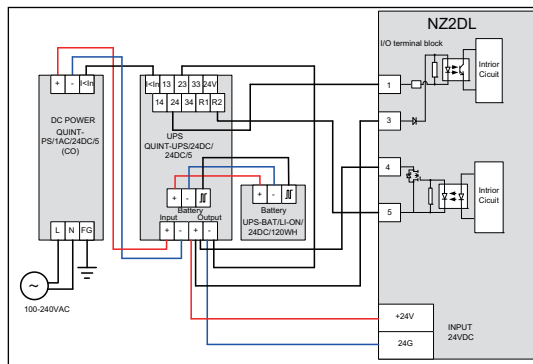
BOX Data Logger can be powered OFF safely by the shutdown process using UPS to stop accessing to CompactFlash card.

- Operation when power failure occurred

When UPS BACKUP (IN) terminal turns ON more than 5 seconds, BOX Data Logger recognizes that the power failure occurred and performs the shutdown process. After the shutdown process is complete, BOX Data Logger requests UPS to stop the output by turning OFF the UPS SHUT DOWN (OUT) terminal.

- Operation after shut down

When UPS BACKUP (IN) terminal turns OFF more than 5 seconds after the shutdown process of BOX Data Logger is completed, BOX Data Logger recognizes the module itself is recovered from power failure and restart itself automatically.



### ■ Precautions

- UPS connection terminal (UPS BACKUP terminal, UPS SHUT DOWN terminal) can not be directly connected to BOX Data Logger depending on the UPS specification. When BOX Data Logger is connected to UPS, check the rate and UPS specification which connects to BOX Data Logger. Connect each terminal and cable according to each rate and specification.
- Use the external trigger input terminal and error output terminal within the rate. Connecting a power supply with wrong voltage rating or incorrect wiring may cause a fire or failure of BOX Data Logger or external equipment.

## Fuse to be attached to external terminal

Installing a fuse for each external terminal is recommended to prevent burnout of the external devices or module in case a load short-circuit occurred on the UPS SHUT DOWN terminal or ERROR terminal.

The fuses we have confirmed the operation are as follows:

Item	Description	
Fuse Model*1	216 3.15	312 003
Rated current	3.15A	3A
Manufacturer	Littelfuse Corporation	

\*1 The fastest type fuse of rated current 3A is recommended.

## Wiring Ethernet cable

There are two Ethernet ports; CH1 and CH2. Use them according to the intended usage.

Ethernet port	Connection target
Ethernet port (CH1)	<ul style="list-style-type: none"><li>• Programmable controller</li><li>• Server (FTP server, etc.)</li><li>• Personal computer to which BOX Data Logger Configuration Tool is installed (Direct connection is available.)</li></ul>
Ethernet port (CH2)	<ul style="list-style-type: none"><li>• Programmable controller</li><li>• Server (FTP server, etc.)</li><li>• Personal computer to which BOX Data Logger Configuration Tool is installed (Direct connection is available.)</li></ul>

### ■Connecting the Ethernet cable

1. Power OFF the BOX Data Logger.
2. Insert the Ethernet cable connector into the port until a click sound is heard. Pay attention to the orientation of the connector.
3. Power ON the BOX Data Logger.
4. Power ON the external equipment connected to the port.

### ■Disconnecting an Ethernet cable

1. Power OFF the BOX Data Logger.
2. Pull out the Ethernet cable while pinching the retaining clip on the connector.

### ■Wiring precautions

- The bending radius near the connector should be at least four times longer than the cable's outside diameter.
- Connect the external equipment according to their specifications.
- Connecting or disconnecting the Ethernet cable  
When connecting or disconnecting the Ethernet cable, hold the connector part of the cable. Failure to do so may cause damage to BOX Data Logger or the cable, or malfunction due to poor contact.
- If the retaining clip of the Ethernet cable is broken  
Do not use any Ethernet cable with a broken retaining clip. Doing so may cause cable disconnection or malfunction.
- Unused Ethernet connector  
To prevent dust from entering the connector, attach the provided connector cover.

- Maximum station-to-station distance (maximum Ethernet cable length)

The maximum station-to-station distance is 100 m. However, it may be shorter depending on the environment. For details, contact the manufacturer of the cables used.

---

**Point** 

During high speed data communication (100 Mbps) via 100BASE-TX connection, communication errors may occur due to the effect of high frequency noise generated from the equipment other than programmable controller, depending on the installation environment. Take the following countermeasures on BOX Data Logger side to eliminate the effect of high frequency noise when constructing the network system.

- Wiring

Do not install the twisted pair cables together with the main circuit or power lines, or bring them close to each other.

Make sure to place the twisted pair cable in a duct.

- Cable

In the environment where the cable is susceptible to noise, use the shielded twisted pair cable (STP cable).

- 10 Mbps communication

Connect the 10 Mbps-compatible equipment with BOX Data Logger and transmit the data at a transmission rate of 10 Mbps.

- Hub

·BOX Data Logger discriminates 10BASE-T/100BASE-TX and full duplex/half duplex communication mode according to hub. When connecting to hub without auto-negotiation function, set up hub for half duplex communication mode. CH1 and CH2 have a different sub network.

·Do not connect to CH1 and CH2 to same hub (except switching hub).

---

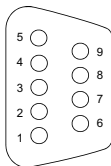
## Wiring RS-232 cable

### Câblage par câble RS-232

RS-232 cable which is comply with the RS-232 regulation must be used within 15m.

The specifications of RS-232 connector are as follows:

*Selon les règles RS-232, la longueur du câble RS-232 utilisé doit être de moins de de 15m.  
Les caractéristiques du connecteur RS-232 sont indiquées ci-après.*



Pin number	Signal (abbreviation)	Signal name	Signal direction	
			NZ2DL	RS-232 device
1	CD(DCD)	Carrier Detect (Data Carrier Detect)	←	←
2	RD(RXD)	Received Data	←	←
3	SD(TXD)	Send Data (Transmitted Data)	→	→
4	ER(DTR)	Data Terminal READY	→	→
5	SG(GND)	Signal Ground	←	←
6	DR(DSR)	Data Set READY	←	←
7	RS(RTS)	Request to Send	→	→
8	CS(CTS)	Clear to Send	←	←
9	CI(RI)	Call Indicator (Ring Indicator)	←	←

English	French
Pin number	Broche N°
Signal(abbreviation)	Signal (abréviation)
Signal name	Nom de signal
Signal direction	Sens du signal
RS-232 device	Dispositif RS-232
Carrier Detect (Data Carrier Detect)	Détection porteuse de données
Received Data	Données reçues
Send Data (Transmitted Data)	Send Data (transmission de données)
Data Terminal Ready	Prêt à émettre
Signal Ground	Masse signal
Data Set Ready	Ensemble de données prêt
Request to Send	Demande d'envoi
Clear to Send	Réponse à demande d'envoi
Call Indicator (Ring Indicator)	Indicateur d'appel

#### Point

Connector specification which is used for RS-232 interface of BOX Data Logger is as follows:

Manufacturer name: DDK Ltd.

Model name: 17LE-23090-27(D4CK) or equivalent models

*Les caractéristiques du connecteur à utiliser pour l'interface RS-232 de l'enregistreur de données BOX sont indiquées ci-dessous.*

*Nom du fabricant : DDK Ltd.*

*Nom de modèle : 17LE-23090-27(D4CK) ou modèle équivalent*

## ■ Wiring precautions

- Apply 1 point grounding for RS-232 connection cable shield.
- The bending radius near the connector should be at least four times longer than the cable's outside diameter.
- Connect the external equipment according to their specifications.
- Do not short-circuit an FG and SG signal of RS-232 connection cable.
- Do not connect an FG signal to BOX Data Logger when an FG and an SG signals are connected inside the connected equipment.
- When connecting the cable, the space for wiring is required.
- For RS-232 cable to be pulled out of the control panel, be sure to ground the shield part of a shield cable.

Also, install a ferrite core.

A ferrite core must be passing two turns of the wire conductor through the ferrite cable core. (Ferrite core used for the test: TDK Corporation ZCAT3035-1330)

- For EMC direction, refer to the following section.

☞ Page 19 EMC AND LOW VOLTAGE DIRECTIVES

---

### Point

During communication using RS-232 connection cable, communication errors may occur due to the effect of high frequency noise generated from the equipment other than programmable controller, depending on the installation environment. Take the following countermeasures on BOX Data Logger side to eliminate the effect of high frequency noise when constructing the network system.

- Wiring

Do not install the RS-232 cables together with the main circuit or power lines, or bring them close to each other.

Make sure to place the RS-232 cable in a duct.

---





## REVISIONS

\*The manual number is given on the bottom left of the front cover.

Revision date	*Manual number	Description
March, 2014	IB(NA)-0800521-B	First edition
June, 2014	IB(NA)-0800521-C	Addition of descriptions of cUL.
August, 2017	IB(NA)-0800521-D	■Added or modified parts SAFETY PRECAUTIONS, RELEVANT MANUALS, TERMS, Chapter 3, Chapter 4
June, 2018	IB(NA)-0800521-E	Addition of descriptions of Standardization Law of the People's Republic of China.
September, 2021	IB(NA)-0800521-F	■Added or modified parts Chapter 3

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

© 2013 MITSUBISHI ELECTRIC CORPORATION

# WARRANTY

---

Please confirm the following product warranty details before using this product.

## **1. Gratis Warranty Term and Gratis Warranty Range**

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
  1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
  2. Failure caused by unapproved modifications, etc., to the product by the user.
  3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
  4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
  5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
  6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
  7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

## **2. Onerous repair term after discontinuation of production**

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

## **3. Overseas service**

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

## **4. Exclusion of loss in opportunity and secondary loss from warranty liability**

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

## **5. Changes in product specifications**

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

## TRADEMARKS

---

The company names, system names and product names mentioned in this manual are either registered trademarks or trademarks of their respective companies.

In some cases, trademark symbols such as <sup>TM</sup> or <sup>®</sup> are not specified in this manual.



Country/ Region	Sales office/ Tel	Country/ Region	Sales office/ Tel
USA	<p> <b> </b> </p>	Turkey	<p> <b> </b> </p>
Mexico	<p> <b> </b> </p>	UAE	<p> <b> </b> </p>
Brazil	<p> <b> </b> </p>	South Africa	<p> <b> </b> </p>
Germany	<p> <b> </b> </p>	China	<p> <b> </b> </p>
UK	<p> <b> </b> </p>	Taiwan	<p> <b> </b> </p>
Ireland	<p> <b> </b> </p>	Korea	<p> <b> </b> </p>
Italy	<p> <b> </b> </p>	Singapore	<p> <b> </b> </p>
Spain	<p> <b> </b> </p>	Thailand	<p> <b> </b> </p>
France	<p> <b> </b> </p>	Vietnam	<p> <b> </b> </p>
Czech Republic	<p> <b> </b> </p>	Malaysia	<p> <b> </b> </p>
Poland	<p> <b> </b> </p>	Indonesia	<p> <b> </b> </p>
Sweden	<p> <b> </b> </p>	India	<p> <b> </b> </p>
Russia	<p> <b> </b> </p>	Australia	<p> <b> </b> </p>

## MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN  
 NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.