

# CL2X16-D1C3V

## CC-Link/LT Remote I/O Module

Thank you very much for purchasing this product.

Please read this manual thoroughly before starting to use the product and handle the product properly.

### User's Manual

MODEL	CL2X16-D1C3V-U
MODEL CODE	13JP25
IB(NA)-0800258-E(1806)MEE	

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### SAFETY PRECAUTIONS

(Read these precautions before using.) Please read this manual carefully and pay special attention to safety in order to handle this product properly. Also pay careful attention to safety and handle the module properly.

These precautions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module to use for a description of the programmable controller system safety precautions. 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.

**▲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.

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 an interlock circuit in a sequence program so that the system operates on the safety side using the communication status information in the event the data link fails into a communication problem. Otherwise, erroneous output and malfunction may result in accidents.
- Input could be switched on or off when a problem occurs in the remote I/O modules. So build an external monitoring circuit that will monitor any input signals that could cause a serious accident.

### [DESIGN PRECAUTIONS]

#### ▲CAUTION

- Do not have control cables and communication cables bundled with or placed near by the main circuit and/or power cables. Wire those cables at least 100mm (3.94 inch) away from the main circuit and/or power cables. It may cause malfunction due to noise interference.

### [INSTALLATION PRECAUTIONS]

#### ▲CAUTION

- Use the module in an environment that meets the general specifications contained in this manual. Using this module in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product.
- Do not directly touch the module's conductive parts. Doing so could cause malfunction or trouble in the module.
- Securely fix the module in place using the DIN rail. If the module is not securely fixed, it may fall off or cause malfunction.

### [WIRING PRECAUTIONS]

#### ▲WARNING

- Perform installation and wiring after disconnecting the power supply at all phases externally. If the power is not disconnected at all phases an electric shock or product damage may result.

### [WIRING PRECAUTIONS]

#### ▲CAUTION

- Wire the module correctly upon verifying the product's rated voltage and the connector pin arrangement. Connecting to a power supply different from rating or miss-wiring may cause fire and/or product failure.
- Make sure foreign objects do not get inside the module, such as dirt and wire chips. It may cause fire, product failure or malfunction.

### [STARTING AND MAINTENANCE PRECAUTIONS]

#### ▲WARNING

- Do not touch the connector pins when the power is on. It may cause an electric shock or malfunction.
- Before cleaning the module, be sure to shut off all the phases of the power supply externally. Failure to do so may cause failure or malfunction of the modules.

### [STARTING AND MAINTENANCE PRECAUTIONS]

#### ▲CAUTION

- Do not disassemble or modify the module. Doing so may cause failure, malfunction, injury, or fire.
- The module case is made of resin; do not drop it or subject it to strong shock. A module damage may result.
- Make sure to switch all phases of the external power supply off before installing or removing the module to/from the panel. Failure to do so may cause failure or malfunction of the modules.
- Before touching the module, always touch grounded metal, etc. to discharge static electricity from the human body, etc. Not doing so can cause the module to fail or malfunction.

### [DISPOSAL PRECAUTIONS]

#### ▲CAUTION

- When disposing of this product, treat it as industrial waste.

### [PRÉCAUTIONS DE CONCEPTION]

#### ▲AVERTISSEMENT

- Prévoir dans le programme séquentiel un circuit de verrouillage sur la base des informations d'état de la communication, de façon à maintenir la sécurité de fonctionnement du système dans l'éventualité d'un problème de communication affectant la liaison de données. Faute de quoi, une sortie erronée ou un dysfonctionnement pourrait être à l'origine d'accidents.
- L'entrée peut être activée ou désactivée à la survenance d'un problème dans les modules E/S distants. On constituera donc un circuit de surveillance externe couvrant tous les signaux d'entrée qui pourraient être à l'origine d'un accident grave.

### [PRÉCAUTIONS DE CONCEPTION]

#### ▲ATTENTION

- Ne pas grouper ni placer à proximité les câbles de commande ou câbles de communication avec les câbles des circuits principaux et/ou d'alimentation. Câbler en plaçant ces câbles à une distance d'au moins 100mm (3,94 pouces) des câbles des circuits principaux ou de l'alimentation. Cela pourrait être à l'origine d'un bruit parasite entraînant des dysfonctionnements.

### [PRÉCAUTIONS D'INSTALLATION]

#### ▲ATTENTION

- Utiliser le module dans un environnement conforme aux spécifications générales présentées dans ce manuel. L'utilisation de ce module dans un environnement autre que celui prévu dans les spécifications générales peut être à l'origine d'un choc électrique, d'un départ de feu ou d'un dysfonctionnement, ou peut endommager ou détériorer le produit.
- Éviter tout contact direct avec les parties conductrices du module. Cela pourrait être à l'origine de dysfonctionnements ou autres problèmes avec le module.
- Fixer fermement le module en place sur le rail DIN. Si le module n'est pas fermement fixé, il risque de tomber ou il peut y avoir des dysfonctionnements.

### [PRÉCAUTIONS DE CÂBLAGE]

#### ▲AVERTISSEMENT

- Effectuer l'installation et le câblage après avoir déconnecté l'alimentation externe sur toutes les phases. Si l'alimentation n'a pas été coupée sur toutes les phases, il y a risque d'électrocution ou d'endommagement du produit.

### [PRÉCAUTIONS DE CÂBLAGE]

#### ▲ATTENTION

- Câbler le module correctement après vérification de la tension nominale du produit et de l'affectation des broches de connecteur. Le raccourcement d'une alimentation de tension nominale différente ou une erreur de câblage peuvent être à l'origine d'un départ de feu et/ou d'une panne du produit.
- Veiller à éviter toute pénétration d'impuretés, copeaux de câblage ou autre corps étranger dans le module. Cela pourrait être à l'origine d'un départ de feu, ou du panne ou d'un dysfonctionnement du produit.

### [PRÉCAUTIONS DE DÉMARRAGE ET DE MAINTENANCE]

#### ▲AVERTISSEMENT

- Ne pas toucher aux broches de connecteur quand l'appareil est sous tension. Cela pourrait être à l'origine d'un choc électrique ou d'un dysfonctionnement.
- Avant de nettoyer le module, vérifier sur l'alimentation externe a bien été coupée sur toutes les phases. Faute de quoi, il y a risque de dysfonctionnement des modules.

### [PRÉCAUTIONS DE DÉMARRAGE ET DE MAINTENANCE]

#### ▲ATTENTION

- Ne pas démonter ni modifier le module. Cela pourrait être à l'origine de pannes, de dysfonctionnements, de blessures ou d'un départ de feu.
- Ne pas faire tomber ou soumettre le module à des chocs car son boîtier en plastique est fragile. Il pourrait en résulter un endommagement du module.
- Avant d'installer le module dans le tableau ou de l'en retirer, il est indispensable de couper l'alimentation externe sur toutes les phases. Faute de quoi, il y a risque de panne ou de dysfonctionnement des modules.
- Avant de toucher au module, se débarrasser de la charge électrostatique qu'accumule le corps humain en touchant un objet métallique raccordé à la terre. Le non-respect de cette précaution peut être à l'origine de pannes ou de dysfonctionnements du module.

### [PRÉCAUTIONS DE MISE AU REBUT]

#### ▲ATTENTION

- Lors de sa mise au rebut, ce produit doit être traité comme un déchet industriel.

## CONDITIONS OF USE FOR THE PRODUCT

- (1) Mitsubishi 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 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'S USER, 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 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 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 representative in your region.

## 1. Overview

This user's manual explains specifications and names of individual parts of the CL2X16-D1C3V type CC-Link/LT remote I/O module (hereinafter abbreviated as remote I/O module).

## 2. Specifications

### 2.1 General Specifications

The General specifications for the remote I/O module are shown in the following table.

Item	Specifications
Operating ambient temperature	0 to 55°C 0 à 55 °C
Temperature of environment	Temperature of environment
Response time	0 to 5ms (High speed response type) 0.05ms (Standard type)
Response time setting	OFF → TYP. 0.05ms ON → MAX. 0.1ms ON → TYP. 0.2ms OFF → MAX. 0.5ms
Common wiring method	16 points/1 common (sensor connector 3-wire type)
Input method	Positive common
Number of stations occupied	In 4-point mode: Occupies 4 stations. In 8-point mode: Occupies 2 stations. In 16-point mode: Occupies 1 station
Module power supply	Voltage: 24V DC (-15 to +20%) (ripple ratio : within 5%) Current consumption: 45mA or lower (When 24V DC and all point is on) Current on startup: 90mA or lower (24V DC)
Noise durability	DC type noise voltage 500Vp-p, noise width 1μs, noise carrier frequency 25 to 60Hz (noise simulator condition) First transient noise burst IEC 61000-4-4 : 1kV
Withstand voltage	500V AC for 1 minute between primary (external DC terminal) and secondary (internal circuit)
Insulation resistance	10MΩ or more between primary (external DC terminal) and secondary (internal circuit) when measured with a 500V DC insulation resistance tester
Protection class	IP2X

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

\*1 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.  
\*2 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.  
\*3 It can also be used in an environment other than on the control panel if the conditions such as usage ambient temperature and humidity are satisfied.

## 2.2 Performance specifications

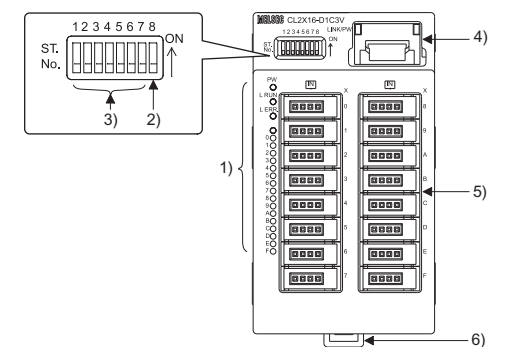
The performance specifications for the remote I/O module are shown in the following table.

Item	Type	CL2X16-D1C3V
Number of inputs		16 points
Isolation method		Photocoupler isolation
Rated load voltage		24V DC (Common with the module power supply)
Rated input current		Approx. 4mA
Max. simultaneous ON input points		100%
ON voltage/ON current		19V or higher/3mA or higher
OFF voltage/OFF current		11V or lower/1.7mA or lower
Input resistance		5.6kΩ
Response time	Response time setting	0.5ms (High speed response type) / 1.5ms (Standard type)
Common wiring method		16 points/1 common (sensor connector 3-wire type)
Input method		Positive common
Number of stations occupied		In 4-point mode: Occupies 4 stations. In 8-point mode: Occupies 2 stations. In 16-point mode: Occupies 1 station
Module power supply	Voltage	24V DC (-15 to +20%) (ripple ratio : within 5%)
	Current consumption	45mA or lower (When 24V DC and all point is on)
	Current on startup	90mA or lower (24V DC)
Noise durability		DC type noise voltage 500Vp-p, noise width 1μs, noise carrier frequency 25 to 60Hz (noise simulator condition) First transient noise burst IEC 61000-4-4 : 1kV
Withstand voltage		500V AC for 1 minute between primary (external DC terminal) and secondary (internal circuit)
Insulation resistance		10MΩ or more between primary (external DC terminal) and secondary (internal circuit) when measured with a 500V DC insulation resistance tester
Protection class		IP2X

Item	Type	CL2X16-D1C3V
Weight		0.08kg
I/O part connection method		Open sensor connector (e-CON) × 16 (Connector plugs are sold separately (compatible wire size: 0.08 to 0.5 mm <sup>2</sup> , depending on the connector plug used). Refer to the CC-Link/LT Catalog.)
Module installation method		DIN rail installation. Can be installed in six directions

## 3. Part Names

This section explains the names of the components for the remote I/O module.



Connector for I/O interface	Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name
CON1	CO N1	1 +24V	CO N5	1 +24V	CO N9	1 +24V	CO N13	1 +24V
	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	
	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	
	4 X0	4 X4	4 X4	4 X8	4 X8	4 X8	4 XC	
CON2	CO N2	1 +24V	CO N6	1 +24V	CO N10	1 +24V	CO N14	1 +24V
	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	
	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	
	4 X1	4 X5	4 X5	4 X9	4 X9	4 X9	4 XD	
CON3	CO N3	1 +24V	CO N7	1 +24V	CO N11	1 +24V	CO N15	1 +24V
	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	
	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	
	4 X2	4 X6	4 X6	4 XA	4 XA	4 XA	4 XE	
CON4	CO N4	1 +24V	CO N8	1 +24V	CO N12	1 +24V	CO N16	1 +24V
	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	2 +V	
	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	3 24G	
	4 X3	4 X7	4 X7	4 XB	4 XB	4 XB	4 XF	

English	French
Connector for I/O interface	Connecteur pour interface E/S
Pin No.	Broche N°
Signal name	Nom de signal

Connector for CC-Link/LT interface	Pin No.	Signal name
LINK/DTW	1	+24V
	2	DA
	3	DB
	4	24G

English	French
Connector for CC-Link/LT interface	Connecteur pour interface CC-Link/LT
Pin No.	Broche N°
Signal name	Nom de signal

No.	Item	Description
1)	Operating status indicator LEDs	Confirmation details LED name PW On: Power supply on. Off: The power supply is turned off or the voltage drop is too large.

No.	Item	Description											
1)	Operating status indicator LEDs	L RUN On: Normal communication. Off: Communication cutoff (time expiration error).											
		L ERR. On: Indicates that a communication data error has occurred or the setting switch is outside the allowable range. Flicker at regular intervals: Indicates that the setting switch has been changed while current is being conducted. (The module continues to operate even while the LED is flickering. The changed settings will be reflected when the power has been restored.) Flicker at irregular intervals: Indicates that the terminal resistor is left unconnected or that the module or connection cable are affected by noise. Off: Normal communication.											
2)	Response time setting <sup>1</sup> switch (SW8)	Set the response time (OFF → ON/ON → OFF time) of the remote I/O module. OFF is set as default (factory-set). Noise may be taken in as input, if high speed response type is set. Be sure to set response time in consideration of the environment. ON: 0.5ms (High speed response type) OFF: 1.5ms (Standard type)											
		Station number setting switches <sup>1</sup> (SW1 to 7)	Select "10", "20" or "40" to set the ten's place of the station number. Select "1", "2", "4" or "8" to set the one's place of the station number. All switches are set to OFF at shipment from the factory. Always set the station number within the range of 1 to 64. A setting error occurs and "L ERR." LED flickers if the value outside the range 1 to 64 is set. (Example) Set the switches as below when setting the station number to 32: <table border="1"><thead><tr><th>Station number</th><th>Ten's place</th><th>One's place</th></tr></thead><tbody><tr><td>40</td><td>(SW1) (SW2)</td><td>10 8 4 2 1</td></tr><tr><td>(SW3)</td><td>(SW4)</td><td>(SW5) (SW6) (SW7)</td></tr><tr><td>32</td><td>OFF ON ON</td><td>OFF OFF ON OFF</td></tr></tbody></table>	Station number	Ten's place	One's place	40	(SW1) (SW2)	10 8 4 2 1	(SW3)	(SW4)	(SW5) (SW6) (SW7)	32
Station number	Ten's place	One's place											
40	(SW1) (SW2)	10 8 4 2 1											
(SW3)	(SW4)	(SW5) (SW6) (SW7)											
32	OFF ON ON	OFF OFF ON OFF											
4)	Connector for CC-Link/LT interface	Connector for connecting the CC-Link/LT communication line, module power supply and external power supply of the input part.											
5)	Connector for I/O interface	Sensor connector for connecting input signals.											
6)	Hook for DIN rail	Hook for installing the module on a DIN rail.											

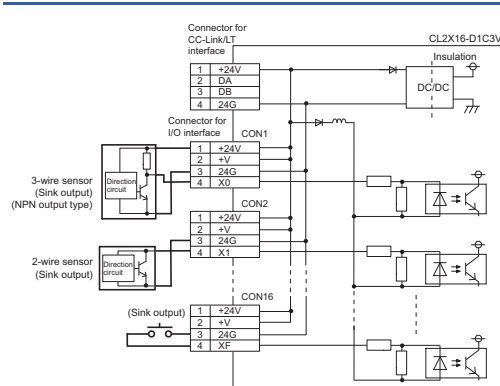
\*1 Set up using a slotted screwdriver with a tip width of 0.9 mm or less.

## 4. Handling Precautions

- When using a DIN rail, attach the DIN rail after taking the following items into consideration:
  - Applicable DIN rail types (conform to JIS C 2812) TH35-7.5F TH35-7.5A
  - Interval between the DIN rail's installation screws Tighten the screws using a pitch of 200mm (7.87in.) or less when attaching a DIN rail.
- To attach the remote I/O module to the DIN rail, press the centerline area of the DIN rail hook beneath the module until a click is heard.
- When installing the remote I/O module into a panel, etc., provide 15mm (0.59 in.) or more of space between the top and bottom of the module and other structures or parts so that good ventilation and ease of operation when exchanging modules can be secured.

## 5. Wiring

### 5.1 External wiring



All 24G pin are connected within the module (common). The module power and external power supply of the input part are supplied via the power adapter. Toutes les broches 24G sont connectées à l'intérieur du module (commun). L'alimentation du module et l'alimentation externe de la partie entrée se font via l'adaptateur d'alimentation.

English	French
3-wire sensor (Sink output) (NPN output type)	Captur 3-fils (sortie dissipateur) (type sortie NPN)
2-wire sensor (Sink output)	Captur fil-2 (sortie dissipateur)
Connector for CC-Link/LT interface	Connecteur pour interface CC-Link/LT
Connector for I/O interface	Connecteur pour interface E/S
(Sink output)	(Sortie dissipateur)
Insulation	Isolation

### 5.2 Connection and wiring of the connector for I/O interface

- Wire the connector for I/O interface according to the following procedure:
  - Verify that the plug cover is installed in the plug unit. Caution: Do not push the plug cover into the plug unit before the cable is inserted. Once a plug is pressure-displaced, it can no longer be reused.
  - Insert the cable<sup>1</sup> until it makes contact with the plug unit.
    - Keep the current within the allowable range of the connected cable.

#### Point

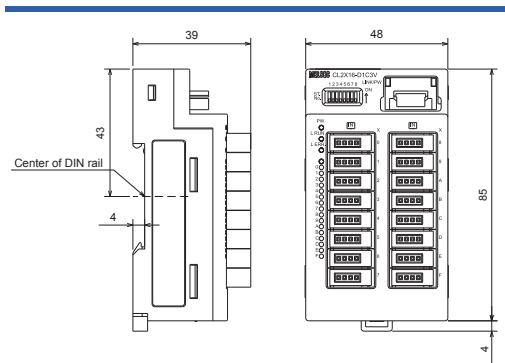
- When inserting the cable, confirm that it has been inserted completely. If the cable is not inserted completely, it may cause contact failures.
- If the cross section of the cable is not round, the cable cannot be inserted smoothly. Cut the cable tip using pliers, etc., and make it as round as possible, then insert it.
- When inserting the cable, the cable may stick out from the front of the cover. In such a case, pull the cable backward so that the tip of the cable stays within the plug cover.

Using a pliers or special tool, push the plug cover into the plug unit, and pressure-displace it. After performing pressure displacement, verify that the plug cover is securely attached to the plug unit, as shown in the figure at right.

#### Point

- While performing pressure displacement, the plug cover may rise because it is not latched against the plug unit correctly. This condition indicates that pressure displacement is incomplete. Push the plug cover until it is securely installed in the plug unit.

## 6. External Dimensions



Unit: mm

## WARRANTY

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

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