

# CI 1PSU-2A CC-Link/LT Dedicated Power Supply

Thank you very much for choosing this product.

Please read this manual thoroughly before starting to use or handling the product

# User's Manual CL1PSU-2A

September 2008

#### MODEL CC-link/IT MANUAL Number JY997D09801D Date

#### **OSAFETY PRECAUTIONS** (Read these precautions before using)

Please read this manual carefully and pay special attention to safety in order

to handle this product properly. These precautions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module for a description of the PLC system safety precautions

hese •SAFETY PRECAUTIONS• are classified into two categories: "DANGER" and "CAUTION".

Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out DANGER properly

Procedures which may lead to a dangerous condition and cause superficial to considerable injury, or physical **ACAUTION** damage only, if not carried out properly

Depending on circumstances, procedures indicated by ACAUTION may also be linked to serious results.

In any case, it is important to follow the directions for usage Store this manual in a safe place so that it may be accessible whenever necessary. Always forward this manual to the end user of the machine containing this product

**IDESIGN PRECAUTIONS1** 

## 

 Depending on a failure in the remote I/O module, an output's status may be ON or OFF. For output signals which can lead to a severe accident, install a circuit to monitor the outputs outside of the module

## **ACAUTION**

. Do not bind the control cable or the connection cable together with the main circuit and power cable. Keep such cables far from the main circuit and power cable. Assure a distance of 100mm (3.94") or more. otherwise a malfunction may occur due to excessive noise Use the dedicated power supply without applying any force on the connector of the CC-Link/LT interface and the connection cable. Otherwise, such cables may break or fail

#### [INSTALLATION PRECAUTIONS]

#### **ACAUTION**

• Use the dedicated power supply within an environment described by the general specifications in this manual. If the dedicated power supply is used in any environment outside the

range for the general specifications, electrical shock, fire, malfunction, product damage or product deterioration may occur.

Do not directly touch the conductive area of the dedicated power supply. Malfunction or damage of the dedicated power supply may be caused by such touching

Securely fix the dedicated power supply with DIN rail or mounting screws. Securely tighten the mounting screws within the specified torque range. If the screws are insufficiently tightened, the dedicated

power supply may drop, short-circuit or malfunction. If the screws are excessively tightened, the screws may be damaged,

and the dedicated power supply may drop or short-circuit Install the dedicated power supply on to a flat surface.

If the mounting surface is concave and/or convex, and if excessive force is applied on the PC board, nonconformity may occur.

#### [WIRING PRECAUTIONS]

#### DANGER

 Make sure to shut down all phases of the power supply outside the module before starting the installation or wiring work. If all phases are not shut down, electrical shock or product damage may be caused.

#### **≜** CAUTION

Confirm the rated voltage and the terminal arrangement of the dedicated power supply, then correctly wire the dedicated power supply. If a power supply not conforming to the specification rating is connected or the dedicated power supply is wired incorrectly fire, failure or malfunction may occur. Tighten the terminal screws within the specified torque range. If the terminal screws are insufficiently tightened, fire or malfunction may occur.

Screws are insumiciently lightened, ince or manufaction may occur. If the terminal screws are excessively lightened, the screws may be damaged, and the module may short-circuit or malfunction. Make sure that foreign objects such as cutting and wire chips do not enter the

dedicated power supply.

Fire, failure or malfunction may be caused by the foreign objects.

When two or more dedicated power supply or power adapter (CL1PAD1) exist in a system, take care in connecting the first LINK/POWER connector to the second LINK connector as indicated below. If the LINK/POWER connector to the the two adapters are connected to each other the adapters may fail



Do not short-circuit the 24G terminal and +24V terminal of the LINK/POWER connector. Some remote I/O modules operate the inputs and outputs using the power supply for communication. Befer to the corresponding manuals for

remote I/O modules and perform wiring correctly. When the LINK connector is not in use, cover the opening by plugging a connector for communication (without any cable) or attaching a piece of tape to prevent dust or conductive foreign materials from getting inside. Such materials may cause failure or malfunction Attach a warning label (hazard symbol 417-IEC-5036) concerning electric

shock to the enclosure of the final system.

#### **ISTARTING AND MAINTENANCE PRECAUTIONS1**

#### **DANGER**

Do not touch the terminals while the power is being supplied. Electrical shock or malfunction may be caused by such touching. Shut down all phases of the power supply outside the dedicated power supply before cleaning or tightening the terminal screws. If all phases are not shu down, the dedicated power supply may fail or malfunction.

#### ∧ CAUTION

 Do not disassemble or modify the dedicated power supply. Failure, malfunction, injury or fire may be caused by such disassembly or modification. The dedicated power supply case is made of a resin.

The dedicated power supply case is fladed of a restin: The dedicated power supply may be damaged by dropping or strong impact. Shut down all external phases of the power supply before attaching or removing the dedicated power supply to/from the panel. If all phases are not shut down, the dedicated power supply to/norm the parlet. If an p

#### DISPOSAL PRECAUTIONS

▲ CAUTION

· When disposing of the product, treat it as an industrial waste

## TRANSPORTATION AND MAINTENANCE PRECAUTIONS

• During transportation avoid the impact which exceeds a regulated value as the dedicated power supply is a precision instrument. It is necessary to check the operation of module after transportation, in case of any impact damage. If not checked, an accident or damage to the machine may result due to a damaged dedicated power supply.

#### Note Concerning the CE Marking

This marking does not guarantee that an entire mechanical module produced in accordance with the contents of the notification comply with the following standards. Compliance to EMC standards of the entire mechanical module should be checked by the user / manufacturer

## Standards with which this product complies

Type : Programmable Controller (Open Type Equipment) Remote I/O module Models : Products manufactured:

from April 1st, 2004 to April 30th, 2006 are compliant with EN61000-6-4 and EN61131-2:1994+A11:1996+A12:2000 after May 1st, 2006 are compliant with EN61131-2:2003

Electromagnetic Compatibility Standards (EMC)	Remark
EN61000-6-4:2001 Electromagnetic compatibility -Generic standards - Emission standard for Industrial environment	Compliance with all relevant aspects of the standard. (Radiated Emissions and Mains Terminal Voltage Emissions)
Brogrammable controllers	Compliance with all relevant aspects of the standard. (RF Immunity, Fast transients, ESD and Damped oscillatory wave)

Electromagnetic Compatibility Standards (EMC)	Remark
EN61131-2: 2003 Programmable controllers Equipment requirements and tests	Compliance with all relevant aspects of the standard. (Radiated Emissions, Mains Terminal Voltage Emissions, RF immunity, Fast Transients, ESD, Surge, Voltage drops and interruptions, Conducted and Power magnetic fields)
Low Voltage Standards (LVD)	Remark
EN61131-2:1994/A11:1996 /A12:2000 :2003 Programmable controllers -Equipment requirements and tests	The equipment has been assessed as a component for fitting in a suitable enclosure which meets the requirements of EN61131-2:1994 + A11:1996 + A12:2000, :2003
For more details please contact the local	Miteubiebi Electric sales site

- Notes for compliance to EMC regulation. It is necessary to install the CL1 series module in a shielded metal control panel

#### 1. Associated manuals

Manual name	Manual No. (Model code)	Description
CC-Link/LT: Power Adapter • Dedicated Power Supply USER'S MANUAL (Detailed Volume)	JY997D06601 (09B712)	Explains specifications, wiring, handling regarding the dedicated power supply and dedicated power supply for CC-Link/LT

#### 2. Outline of Product

This product is a dedicated power supply connected to CC-Link/LT This product is a dedicated power supply connected to CO-Link/ This product supplies 24V DC power to the CC-Link/LT system

#### 3. Name of Each Part

#### 3.1 Name of each part and assignment



Name		Description			
Status indicator LED	24V		Lit while the power is supplied		
	LINK	DB	For communication		
	connector	DA	For communication		
Interface		24G	Power supply for communication (-)		
	LINK/ POWEB	DB	For communication		
	connector	DA	For communication		
		+24V	Power supply for communication (+)		
	L Supplies power from outside	Supplies power from outside to dedicated			
Power terminal	N		power supply.		
	٢		Input voltage: 100,120,200,230,and 240V AC (Voltage allowable range: 85 to 264V AC)		

#### 3.2 Handling of LINK connector and LINK/POWER connector



- 1) LINK connector Dedicated for communication only (does not supply power). Used when two or more dedicated power supply or power adapter (CL1PAD1) are used in the CC-Link/LT system 2) LINK/POWER connector
- Dedicated for communication, and supplies the power to the CC-Link/LT system

#### 4. Specifications

#### 

Item	Specification				
Ambient working temperature	0 to 55°C (32 to 131°F)				
Ambient storage temperature	-25 to 75°C (-13 to 167°F)				
Ambient operating humidity	5 to 95%RH	I: Dew conde	nsation shall no	ot be allowed.	
Ambient storage humidity	5 to 95%RH	I: Dew conde	nsation shall no	ot be allowed.	
	Intermittent	vibration is p	resent	Number of sweep times	
	Frequency	Acceleration	Half amplitude		
	10 to 57Hz	-	0.075mm	1	
Vibration resistance	57 to 150Hz		-	10 times in each of	
resistance	Continuous	X, Y and Z directions			
	Frequency	Acceleration	Half amplitude	(80 min)	
	10 to 57Hz	-	0.035mm	1	
	57 to 150Hz	4.9m/s <sup>2</sup>	-		
Impact resistance	147 m/s <sup>2</sup> , 3 times in each of X, Y and Z directions				
Operating atmosphere	Corrosive gas should not be present.				
Operating altitude	2,000m(6561'8") or less (*1)				
Installation place	Inside control panel				
Over-voltage category	II or less (*2)				
Degree of contamination	2 or less (*3)				
Grounding	100Ω or less				

- atmospheric pressure at the altitude of 0 m. If the module is used in such an environment it may fail
- \*2 This category indicates in which area (inside the site) in relation to the public wiring net the equipment is to be connected Category II applies, for example, to equipment whose power is supplied from a fixed facility
- The surge-resistant voltage of equipment whose rating is up to 300V is 2,500V. \*3 This index indicates the degree of conductive substances generated in the environment in which the module is used. The degree of contamination 2 indicates that contamination is caused by the generation of only nonconductive substances.

In this degree, however, temporary conduction may be caused by accidental condensation.

Item		Specification			
Rated voltage		100, 120, 200, 230, and 240V AC			
	Voltage allowable range	85 to 264V AC			
Input	Rated current	1.2A / 100V AC 0.7A / 200V AC			
mpar	Rated frequency	50 or 60Hz			
	Power fuse	3.15A			
	Inrush current	Max. 50A / 100V AC Max. 60A / 200V AC			
	Output voltage	24V DC +10 %/-5 %			
Output	Output current	0.01A to 2A Derating occurs according to the ambient temperature and power voltage. [Use the module in a proper range so that the total current consumption of each module does not exceed 2A (except the period immediately after the power is turned on).]			
	Ripple noise	500mVp-p or below			
Noise resistance		By noise simulator of 1000Vp-p in noise voltage, $1\mu$ s in noise width, and 25 to 60Hz in frequency			
Withsta	nd voltage	AC type 1500V AC for one min. DC type 500V AC for one min.			
Allowab power fa	le momentary ailure time	Operation continues after power failure for 10ms or less.			
Insulatio	on resistance	10 M $\Omega$ between the external terminals as a whole and the ground terminal by 500V DC megger			
Protection class		IP1X			
Protec- tion					
func- Overcurrent tion protection		110 to 160% Drooping characteristic Automatically reset			
External connection method		-Supplies power from outside to dedicated power supply: 3 points (M3 screws) on terminal block - 10 communicate and to supply power to CC-Link LT system: Connector with 4 pins dedicated to CC-LinkLT (2 pcs.)			

Mass (Weight) Output derating



0.4 kg (0.88 lbs)

 The output current that can be used varies depending on the ambient temperature, therefore, refer to the output derating chart above and use the module within its proper range. (When load factor is at 100%, up to 2A current can be output. At 80%, up to 1.6A.)

· When the output current exceeds the specified value, an overcurrent protection circuit drives the output voltage down. When the overcurrent status or short circuit is cleared, the output voltage

automatically returns to its normally operating value. When an output voltage exceeding the specified value is generated due to some defect inside the power supply, for instance, the output is interrupted

so that the high voltage will not be output. The protection circuit may also be triggered when a reverse current is

generated from the load circuit connected to the output terminal or when an external overvoltage is input. If the overvoltage protection circuit is triggered once, and the output is

interrupted and does not return to normal automatically, please have the module checked and/or repaired

#### 5. Installation

The dedicated power supply can be installed to a DIN rail or directly installed with screws

Provide a space of 50mm (1.97 in.) or more between the dedicated power supply main unit and other equipment or structures. Keep the module as far away from high-voltage cables, high-voltage devices, or power-driven devices as possible

Each installation procedure is described below.

#### 5.1 Installation direction

Do not install the dedicated power supply on the floor surface, the ceiling surface or in the vertical direction. If the dedicated power supply is installed on such a surface or in such a direction, its temperature may rise. Make sure to install the dedicated power supply on the wall horizontally.

#### 5.2 Installation to DIN rail

When installing the module 1) align the upper DIN rail installation groove on the module with the DIN rail, and 2) press the module on to the DIN rail When removing the module, 3) pull the hook downward for installation to DIN rail 4) then remove the module



#### 5.3 Direct installation

Mount the dedicated power supply by tightening M4 screws to the upper and lower mounting holes (two holes in all) provided in the dedicated power supply.

Applicable corour	M4 × 0.7mm(0.03") × 16mm(0.63") or more
Applicable screw	(Tightening torque range: 78 to 108 N·cm)

6. Construction Cautions

#### Installation of dedicated power supply

At least one dedicated power supply is required per CC-Link/LT system. When constructing the system using only one dedicated power supply, the following three conditions should be satisfied

If the following four conditions are not satisfied, use two or more dedicated power supplies or power adapters (CL1PAD1) in constructing the system.

- The current capacity of the dedicated power supply is 2A or less, therefore, total current consumption should be an equivalent to or less than 2 A.
- Total current at start-up of each module + current consumption of the I/O equipment that receives power from a dedicated power supply  $\leq$  Maximum output current (2.2A) of dedicated power supply
- In order to operate a stable system, the voltage drop should be equivalent to or less than 3.6 V
- The minimum operating voltage of each module is 20.4 V, therefore, supply voltage subtracted by the voltage drop should be equivalent to or more than 20.4 V.

#### 6.1 System power calculation method

#### 6.1.1 Current consumption calculation

con in C	Current sumption C-Link/LT system	=	Total current consumption of each module in CC-Link/LT system	+	Total current consumption of I/O equipment (such as sensors) (to which power is supplied via communication cable)*1	≤2A
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\*1 Some remote I/O modules for CC-Link/LT supply the power for I/O via the connection cable For the details, refer to the instruction manual of each remote I/O module.

## 6.1.2 Voltage drop

Calculate the voltage drop based on the simplified graph or the calculation formula. (supply voltage: 24V DC, ambient temperature: 20°C) 1) Selection based on the simplified graph



#### 2) Selection based on the calculation formula



\*1 Some remote I/O modules for CC-Link/LT supply the power for I/O via the connection cable

For the details, refer to the instruction manual of each remote I/O module

The simplified graph and the calculation formula concerning voltage drop calculations may not be accurate depending on the ambient temperature and the number of used connectors dedicated to CC-Link/LT. If the driving voltage (20 4V) cannot be assured in a used remote I/O module, add another dedicated power supply or power adapter (CL1PAD1).

#### 6.1.3 Start-up current calculation

Construct the system properly so that the calculated start-up current (when the power is turned on) does not exceed the maximum output current (2.2 A) of the dedicated power supply.

Total current at	Total current consumption of I/O	/	Maximum output
start-up of each	equipment (such as sensors)		current (2.2 A) of
module of	(to which power is supplied via a		dedicated power
CC-Link/LT	connecting cable)		supply

Refer to "CC-Link/LT: Power Adapter • Dedicated Power Supply USER'S MANUAL (Detailed Volume)"

#### 7. Power Wiring



#### Crimp-style terminal

For the power wiring, use crimp-style terminals of the following dimensions. For the I/O wiring, use crimp-style terminals of the following dimensions.



When wiring one cable to one terminal When wiring two cables to one terminal



Use a power wire of 2mm<sup>2</sup> (0.08in.<sup>2</sup>) or more.

- Perform grounding (100Ω or less) with a wire of 2 mm<sup>2</sup> (0.08in.<sup>2</sup>) or more to the grounding terminal. However, never perform common grounding with a high voltage system
- · Tighten the terminal screws (M3 screws) on the terminal block with a tightening torgue of 42 to 58 N.cm.

#### 8. Outside Dimensions



This manual confers no industrial property rights or any rights of any other kind, no does it confer any natent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur a a result of using the contents noted in this manual.

#### 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

#### A For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power aerospace, medicine or passenger movement vehicles, consult with Mitsubishi This product has been manufactured under strict quality control. However when
- installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.



#### MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN HIMEJI WORKS : 840, CHIYODA CHO, HIMEJI, JAPAN

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

for dedicated power supply



CL1PSU-2A

# CC-Link/LT Dedicated Power Supply

Thank you very much for choosing this product. Please read this manual thoroughly before starting to use or handling the

# User's Manual



# **OSAFETY PRECAUTIONS**

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Procedures which may lead to a dangerous condition and cause death or serious injury if not carried at property

Procedures which may lead to a dangerous condition and cause superficial to considerable injury, or physical damage only, if not carried out properly. 

Depending on circumstances, procedures indicated by CAUTION may also be linked to serious results. In any case, it is important to follow the directions for usage. Store this manual in a safe place so that it may be accessible whenever necessary. Always forward this manual to the end user of the machine containing this product.

[DESIGN PRECAUTIONS]

# DANGER

Depending on a failure in the remote I/O module, an output's status may be ON or OFF. For output signals which can lead to a severe accident, install a circuit to monitor the outputs outside of the module.

## **∆**CAUTION

Do not bind the control cable or the connection cable together with the main circuit and power cable. Keep such cables far from the main circuit and power cable. Keep such cables far from the main circuit and power cable. Assure a distance of 100mm (3.94\*) or more, otherwise a malfunction may occur due to excessive noise.
Use the dedicated power supply without applying any force on the connector of the CC-Link/LT interface and the connection cable. Otherwise, such cables may break or fail.

# [INSTALLATION PRECAUTIONS]

# 

CAUTION Use the dedicated power supply within an environment described by the general specifications in this manual. If the dedicated power supply is used in any environment outside the range for the general specifications, electrical shock, fire, malfunction, product damage or product deterioration may occur. Do not directly touch the conductive area of the dedicated power supply. Malfunction or damage of the dedicated power supply may be caused by such touching. • Securely fix the dedicated power supply with DIN rail or mounting screws. Securely tighten the mounting screws within the specified torque range. If the screws are insufficiently tightened, the dedicated power supply may drop, short-circuit or malfunction. If the screws are excessively tightened, the screws may be damaged, and the dedicated power supply may drop or short-circuit. Install the dedicated power supply more to fail surface.

Install the dedicated power supply on to a flat surface. If the mounting surface is concave and/or convex, and if excessive force is applied on the PC board, nonconformity may occur.

# WIRING PRECAUTIONS

DANGER Make sure to shut down all phases of the power supply outside the module before starting the installation or wiring work. If all phases are not shut down, electrical shock or product damage may be caused.

Item		Specification		
Rated voltage		100, 120, 200, 230, and 240V AC		
	Voltage allowable range	85 to 264V AC		
Input	Rated current	1.2A / 100V AC 0.7A / 200V AC		
mput	Rated frequency	50 or 60Hz		
	Power fuse	3.15A		
	Inrush current	Max. 50A / 100V AC Max. 60A / 200V AC		
	Output voltage	24V DC +10 %/-5 %		
Output Output current		0.01A to 2A Derating occurs according to the ambient temperature and power voltage. [Use the module in a proper range so that the total current consumption of each module does not exceed 2A (except the period immediately after the power is turned on).]		
	Ripple noise	500mVp-p or below		
Noise resistance		By noise simulator of 1000Vp-p in noise voltage, 1µs in noise width, and 25 to 60Hz in frequency		
Withstand voltage		AC type 1500V AC for one min. DC type 500V AC for one min.		
Allowab power fa	le momentary ailure time	Operation continues after power failure for 10ms or less.		
Insulatio	on resistance	10 M $\Omega$ between the external terminals as a whole and the ground terminal by 500V DC megger		
Protecti	on class	IP1X		
tion protection ( func- Overcurrent		27V to 33V Output interrupt Not automatically reset		
		110 to 160% Drooping characteristic Automatically reset		
External connection method		-Supplies power from outside to dedicated power supply: 3 points (M3 screws) on terminal block -To communicate and to supply power to CC-Link LT system: Connector with 4 pins dedicated to CC-Link/LT (2 pcs.)		
Mass (W	(eight)	0.4 kg (0.88 lbs)		

#### Output derating

100 100V AC or higher 90V AC 80 ---- 85V AC (%) ictor 60

CAUTION
Confirm the rated voltage and the terminal arrangement of the dedicated power supply, then correctly wire the dedicated power supply. If a power supply not conforming to the specification rating is connected or the dedicated power supply is rised incorrectly, fire, failure or malfunction may occur.
Tighten the terminal screws within the specified torque range. If the terminal screws are excessively tightened, the screws may be damaged, and the module may short-circuit or malfunction.
Make sure that foreign objects such as cutting and wire chips do not enter the dedicated power supply. The connector do the foreign objects.
When two or more dedicated power supply or power adapter (CL1PAD1) exist in a system, take care in connecting the first LINK/POWER connector in the two adapters are connected to each other, the adapters may fail.
Correct



Connector connector connector connector bothector bothector connector connector connector connector bothector connector connector connector connector connector connector. Some remote I/O modules operate the inputs and outputs using the power supply for communication. Refer to the corresponding manuals for remote I/O modules and perform wiring correctly. If wiring is performed incorrectly, fire, failure or malfunction may occur. When the LINK connector is not in use, cover the opening by plugging a connector for communication (without any cable) or attaching a piece of tape to prevent dust or conductive foreign materials from getting inside. Such materials may cause failure or malfunction. Attach a warning label (hazard symbol 417-IEC-5036) concerning electric shock to the enclosure of the final system.

[STARTING AND MAINTENANCE PRECAUTIONS]

# DANGER

Do not touch the terminals while the power is being supplied. Electrical shock or malfunction may be caused by such touching. Shut down all phases of the power supply outside the dedicated power supply before cleaning or tightening the terminal screws. If all phases are not shut down, the dedicated power supply may fail or malfunction.

# **∆**CAUTION

 Do not disassemble or modify the dedicated power supply. Failure, malfunction, injury or fire may be caused by such disassembly or modification.
 The dedicated power supply case is made of a resin.
 The dedicated power supply case is made of a resin.
 Shut down all external phases of the power supply before attaching or removing the dedicated power supply forfrom the panel. If all phases are not shut down, the dedicated power supply may fail or malfunction. [DISPOSAL PRECAUTIONS]

 When disposing of the product, treat it as an industrial waster [TRANSPORTATION AND MAINTENANCE PRECAUTIONS]

# 

During transportation avoid the impact which exceeds a regulated value as the dedicated power supply is a precision instrument. It is necessary to check the operation of module after transportation, in case of any impact damage. If not checked, an accident or damage to the machine may result due to a damaged dedicated power supply.

●Note Concerning the CE Marking● This marking does not guarantee that an entire mechanical module produced in accordance with the contents of the notification comply with the following standards. Compliance to EMC standards of the entire mechanical module should be checked by the user / manufacturer.

should be checked by the user / manufacturer. Standards with which this product complies Type : Programmable Controller (Open Type Equipment) Remote I/O module Models : Products manufactured: from April 1st, 2004 to April 30th, 2006 are compliant with EN61000-6-4 and EN61131-2:1994-A111996-A412:2000 after May 1st, 2006 are compliant with EN61131-2:2003

Electromagnetic Compatibility Standards (EMC)	Remark
EN61000-6-4:2001 Electromagnetic compatibility -Generic standards - Emission standard for Industrial environment	Terminal Voltage Emissions)
EN61131-2:1994/A11:1996/A12:2000 Programmable controllers -Equipment requirements and tests	Compliance with all relevant aspects of the standard. (RF Immunity, Fast transients, ESD and Damped oscillatory wave)

## 5.2 Installation to DIN rail

When installing the module, 1) align the upper DIN rail installation groove on the module with the DIN rail, and 2) press the module on to the DIN rail. When removing the module, 3) pull the hook downward for installation to DIN rail, 4) then remove the module.

# Installation **∏**3)

Applicable DIN rail TH35-7.5Fe and TH35-7.5Al Width: 35mm (1.38") 5.3 Direct installation

Mount the dedicated power supply by tightening M4 screws to the upper and lower mounting holes (two holes in all) provided in the dedicated power supply. Applicable screw M4 × 0.7mm(0.03") × 16mm(0.63") or more (Tightening torque range: 78 to 108 N·cm)

## 6. Construction Cautions

## Installation of dedicated power supply

Installation of dedicated power supply At least one dedicated power supply is required per CC-Link/LT system. When constructing the system using only one dedicated power supply, the following fure conditions should be satisfied. If the following four conditions are not satisfied, use two or more dedicated power supplies or power adapters (CL1PAD1) in constructing the system. • The current capacity of the dedicated power supply is 2A or less, therefore, total current consumption should be an equivalent to or less than 2 A. • Total current at start-up of each module + current consumption of the I/O equipment that receives power from a dedicated power supply ≤ Maximum output current (2.2A) of dedicated power supply

- In order to operate a stable system, the voltage drop should be equivalent to or
- less than 3.6 V. The minimum operating voltage of each module is 20.4 V, therefore, supply voltage subtracted by the voltage drop should be equivalent to or more than 20.4 V.
- 6.1 System power calculation method

6.1.1 Current consumption calculation

omagnetic Compa Standards (EMC) Remark Compliance with all relevant aspects of (Radiated Emissions, Mains Terminal (Radiated Emissions, RF immunity, Fast Transients, ESD, Surge, Voltage drops and interruptions, Conducted and Power magnetic fields) N61131-2: 2003 Programmable controllers -Equipment requirements and tests Low Voltage Standards (LVD) Remark Hemark The equipment has been assessed as a component for fitting in a suitable enclosure which meets the requirements of ENG1131-2:1994 + A11:1996 + A12:2000, :2003 EN61131-2:1994/A11:1996 /A12:2000 2003 rogrammable controllers -Equipment requirements and tests

For more details please contact the local Mitsubishi Electric sales site. Notes for compliance to EMC regulation.
 It is necessary to install the CL1 series module in a shielded metal control panel.

#### Associated manuals 1.

Manual name	Manual No. (Model code)	Description
CC-Link/LT: Power Adapter • Dedicated Power Supply USER'S MANUAL (Detailed Volume)	J199/D06601	Explains specifications, wiring, handling regarding the dedicated power supply and dedicated power supply for CC-Link/LT

# 2. Outline of Product

This product is a dedicated power supply connected to CC-Link/LT. This product supplies 24V DC power to the CC-Link/LT system.

#### 3. Name of Each Part

#### 3.1 Name of each part and assignment



Name	Description				
Status indicator LED	24V		Lit while the power is supplied		
Interface	LINK	DB	For communication		
	connector	DA	For communication		
		24G	Power supply for communication (-)		
	LINK/ POWEB	DB	For communication For communication		
	connector	DA			
		+24V	Power supply for communication (+)		
Power terminal	L		Supplies power from outside to dedicated power supply.		
	N				
	Ē		Input voltage: 100,120,200,230,and 240V AC (Voltage allowable range: 85 to 264V AC)		

## 3.2 Handling of LINK connector and LINK/POWER connector



- LINK connector Dedicated for communication only (does not supply power). Used when two or more dedicated power supply or power adapter (CL1PAD1) are used in the CC-Link/LT system.
- LINK/POWER connector Dedicated for communication, and supplies the power to the CC-Link/LT system

# 4. Specifications

<ol> <li>General sp</li> </ol>	1) General specifications						
Item	Specification						
Ambient working temperature	0 to 55°C (32 to 131°F)						
Ambient storage temperature	-25 to 75°C (-13 to 167°F)						
Ambient operating humidity	5 to 95%RH: Dew condensation shall not be allowed.						
Ambient storage humidity	5 to 95%RH: Dew condensation shall not be allowed.						
	Intermittent	vibration is pr	Number of sweep times				
	Frequency	Acceleration	Half amplitude	_			
	10 to 57Hz	-	0.075mm				
Vibration resistance	57 to 150Hz	9.8m/s <sup>2</sup>	-	10 times in each of			
resistance	Continuous	vibration is pr	X, Y and Z directions				
	Frequency	Acceleration	Half amplitude	(80 min)			
	10 to 57Hz	-	0.035mm				
	57 to 150Hz	4.9m/s <sup>2</sup>	-				
Impact resistance	147 m/s <sup>2</sup> , 3 times in each of X, Y and Z directions						
Operating atmosphere	Corrosive gas should not be present.						
Operating altitude	2,000m(6561'8") or less (*1)						
Installation place	Inside control panel						
Over-voltage category	II or less (*2)						
Degree of contamination	2 or less (*3)						
Grounding	Grounding 100Ω or less						
*1 The module connet he used in an environment procedurized above the							

- The module cannot be used in an environment pressurized above the atmospheric pressure at the alitude of 0 m. If the module is used in such an environment, it may fail.
   This category indicates in which area (inside the site) in relation to the public wiring net the equipment is to be connected. Category II applies, for example, to equipment whose power is supplied from a fixed facility. The surge-resistant voltage of equipment whose rating is up to 300V is 2,500V.
   To his index indicates the degree of conductive substances generated in the environment in which the module is used. The degree of contamination 2 indicates that contamination is caused by the generation of only non-conductive substances.
   In this degree, bowever, temporary conduction may be caused by conductive substances. In this degree, however, temporary conduction may be caused by accidental condensation.

## 8. Outside Dimensions



\*1 Some remote I/O modules for CC-Link/LT supply the power for I/O via the connection cable. For the details, refer to the instruction manual of each remote I/O module.

: 0.08

onstar

0.06

Furthest station from the dedicated power supply

le or a combination of cables

Total current consumption (A)  $\leq 3.6V$ 

 $\leq 3.6V$ 

Total current onsumption (A

Total current consumption of I/C equipment (such as sensors) equipment (such as sensors) (to which power is supplied via communication cable)\*1

The simplified graph and the calculation formula concerning voltage drop aclculations may not be accurate depending on the ambient temperature and the number of used connectors dedicated to CC-Link/LT. If the driving voltage (20.4V) cannot be assured in a used remote I/O module, add another dedicated power supply or power adapter (CL1PAD1). 6.1.3 Start-up current calculation

2) Selection based on the calculation formula

Voltage irop (V)

• When yo

Voltage drop (V)

Maximum distance

Total current

consumption

When you use VCTF cable or High flexible ca

Maximum

Constan

distance (m) + Constant: 9

dedicated flat cable Maximum

Total current consumption of each module in CC-Link/LT

system

Construct the system properly so that the calculated start-up current (when the power is turned on) does not exceed the maximum output current (2.2 A) of the dedicated power supply.

Total current consumption of I/O equipment (such as sensors) (to which power is supplied via a connecting cable) Total current at start-up of each module of CC-Link/LT  $\leq$ supply Refer to "CC-Link/LT: Power Adapter • Dedicated Power Supply USER'S MANUAL (Detailed Volume)"



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## A For safe use

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Brazi

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Italy



#### Ambient temperature (°C)

The output current that can be used varies depending on the ambient temperature, therefore, refer to the output derating chart above and use the module within its proper range. (When load factor is at 100%, up to 2A current can be output. At 80%, up to 1.6A.)

When the output at two s, qu to have protection circuit drives the output voltage down. When the overcurrent status or short circuit is cleared, the output voltage automatically returns to its normally operating value.

automatically returns to its normally operating value. • When an output voltage exceeding the specified value is generated due to some defect inside the power supply, for instance, the output is interrupted so that the high voltage will not be output. The protection circuit may also be triggered when a reverse current is generated from the load circuit connected to the output terminal or when

an external overvoltage is input. If the overvoltage protection circuit is triggered once, and the output is interrupted and does not return to normal automatically, please have the module checked and/or repaired.

## 5. Installation

The dedicated power supply can be installed to a DIN rail or directly installed with screws

Provide a space of 50mm (1.97 in.) or more between the dedicated power supply main unit and other equipment or structures. Keep the module as far away from high-voltage cables, high-voltage devices, or power-driven devices as possible. Each installation procedure is described below.

#### 5.1 Installation direction

Do not install the dedicated power supply on the floor surface, the ceiling surface or in the vertical direction. If the dedicated power supply is installed on such a surface or in such a direction, its temperature may rise Make sure to install the dedicated power supply on the wall horizontally.



- 1 Some remote I/O modules for CC-Link/LT supply the power for I/O via the For the details, refer to the instruction manual of each remote I/O module

## 6.1.2 Voltage drop

Calculate the voltage drop based on the simplified graph or the calculation formula. (supply voltage: 24V DC, ambient temperature: 20°C)

1) Selection based on the simplified graph

When you use VCTF cable or High flexible Whe cable or a combination of cables





for dedicated power supply

#### Crimp-style terminal

For the power wiring, use crimp-style terminals of the following dimensions For the I/O wiring, use crimp-style terminals of the following dimensions.



When wiring one cable to one terminal When wiring two cables to one terminal Crimp-style Crimp-style Termina Ten

- Use a power wire of 2mm<sup>2</sup> (0.08in.<sup>2</sup>) or more
- Perform grounding (100Ω or less) with a wire of 2 mm<sup>2</sup> (0.08in.<sup>2</sup>) or more to the grounding terminal. However, never perform common grounding with a high voltage system.
- Tighten the terminal screws (M3 screws) on the terminal block with a tightening torque of 42 to 58 N.cm.

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
   Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
   This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or fails afe functions in the system

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