



ENGLISH

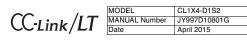
# CL1X4-D1S2 CC-Link/LT Remote I/O Module

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

# User's Manual

Side A

Side B



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

Please read this manual carefully and pay special attention to safely in order to handle this product properly. Also pay careful attention to safely 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 PLC system safety precautions

These OSAFETY PRECAUTIONSO classify the safety precautions into two categories: "WARNING" and "CAUTION".

Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.
Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical 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 you can take it out and read it whenever necessary. Always forward it to the end user.

### [DESIGN PRECAUTIONS]

· 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 falls into a communication problem. Otherwise, erroneous output and malfunction may result in accidents. Remote input and output can not be switched ON or OFF when a problem occurs in the remote I/O modules. Therefore build an external monitoring circuit that will monitor any input signals that could cause a serious accident.

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Do not have control cables and connection 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.

Use the module and the connection cable without applying any force on

Otherwise, such cables may be broken or fail.

# **INSTALLATION PRECAUTIONS1**

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• 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.
- Tighten the module securely using DIN rail or installation screws within the specified torque range.

If the screws are too lose, the module may drop from its installation position, short circuit, or malfunction. If the screws are too tight, the screws may be damaged, which may cause the module to drop from its installation position or short circuit.

Install the module on a flat surface

If the mounting surface has concave and/or convex, an excessive force may be applied on the module, and nonconformity may be caused.

# 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.

# **CAUTION**

Perform correct wiring for the module according to the product's rated voltage and terminal arrangement. Connecting to a power supply different from rating or miss-wiring may cause fire, product failure or malfunction. Fix I/O terminal block securing screws securely within the regulated torque. Loose I/O terminal block securing screws may cause fire and/or malfunction.

If the I/O terminal block securing screws are too tight, it may cause short circuit, equipment failures, or erroneous operation due to damage of the screws. Make sure foreign objects do not get inside the module, such as dirt and wire

chips. It may cause fire, product failure or malfunction. Attach a warning label (hazard symbol 417-IEC-5036) concerning the electric

shock to the location

# [STARTING AND MAINTENANCE PRECAUTIONS]

# 

Do not touch the terminals when the power is ON. It may cause an electric shock or malfunction. Perform cleaning the module or retightening of terminal screws after turning

OFF the all external power supply for sure. Failure to do so may cause failure or malfunction of the modules

# **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.

#### [DISPOSAL PRECAUTIONS]

# · When disposing of this product, treat it as industrial waste. [TRANSPORTATION AND MAINTENANCE PRECAUTIONS]

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During transportation avoid the impact which exceeds a regulated value as the module is a precision instrument. Doing so could cause trouble in the module

It is necessary to check the operation of module after transportation, in case of any impact damage. Otherwise, causes the damage of the machine and the accident.

#### Note Concerning the CE Marking

This note 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.

# Attention

- . This product is designed for use in industrial applications Note
- · Authorized Representative in the European Community:
- Mitsubishi Electric Europe B.V.
- Gothaer Str. 8, 40880 Ratingen, Germany

#### Standards with which this product complies

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

from February 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 ENE1131-2:2007

	after May 1st, 2006 are compliant with EN61131-2:2007				
	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)			
EN61131-2:1994/A11:1996/A12:2000		Compliance with all relevant aspects of the standard. (RF Immunity, Fast transients, ESD and Damped oscillatory wave)			

Electromagnetic Compatibility Standards (EMC)	Remark				
EN61131-2: 2007 Programmable controllers -Equipment requirements and tests	Compliance with all relevant aspects of the standard. (Radiated Emissions, Conducted Emissions, Radiated electromagnetic field, Fast transient burst, Electrostatic discharge, High-energy surge, Voltage drops and interruptions, Conducted RF and Power frequency magnetic field)				
For more details please contact the local Mitsubishi Electric sales site.					
<ul> <li>Notes for compliance to EMC regulation.</li> </ul>					

It is necessary to install the CL1 series module in a shielded metal control nanel

#### Use this product in Zone A<sup>\*1</sup> as defined in EN61131-2.

# \*1 Zone defined in EN61131-2

Separation defined in EN61131-2 for EMC LVD regulation decided depending on condition in industrial setting.

- Zone C = Factory mains which is isolated from public mains by dedicated transformers.
- Zone B = Dedicated power distribution which is protected by secondary surge protection. (300V or less in the rated voltage is assumed )
- Zone A = Local power distribution which is isolated from dedicated power distribution by AC/DC converters, isolation transformers, etc. (120V or less in the rated voltage is assumed.)

# 1. Outline of Product

This product is a spring clamp terminal block type input module connected to CC-Link/LT

This product has four input points (24V DC).

#### 2. Name and Setting of Each Part and Terminal Arrangement

0 1 2 3 Connector termina 0000 assignment Connector for Input operation 2-04.5 indicator LEDs Input is ON: Lit (M4 mounting CC-Link/LT interface Status Input is OFF 10000 indicator screw) LEDs Extinguished PN L RIN L ERR. 0000  $(\bigoplus$ 40000 ÖÖDDDDD HISO IN 800008421 054 STATION NO. 156  $\bigcirc$  $\overline{\mathbf{\Phi}}$ Hook for installation Terminal block fo to DIN rail I/O interface Terminal arrangement DIP switch Terminal number and Signal name) DIP switch assignment 40 20 10 8 4 2 1 0.5ms DC24A XÕ X1 X2 X3 ↔ ON 2 4 6 8 10 НННННН DC24B COMB COMB COMB COMB

#### 0.425 to 0.575 N•m

Name	Description		
	PW	ON while the power is supplied.	
	L RUN	ON while normal operation is executed.	
Status indicator LED	L ERR.	ON: When a communication error or DIP switch setting error occurred Flickering at a constant interval: When the setting of the DIP switch was changed while the power was supplied (even while the LED is flickering, the operation continues. The new setting becomes valid when the power is turned OFF once, then ON again.) Flickering at a intermittent interval: When a terminal resistor is not attached or when the module or a connection cable is affected by noise	

Nama				De		lan			
Name	Description								
Input operation indicator LED	ON while Extinguis OFF.				ut is	Inpu	00	2 O ation i	3 O indicator
Interface	Connecto power su	pply (2	24G/D	B/DA	/+24\	)			
Terminal block for I/O interface	spring cla and I/O p				k for	conne	ecting	input	signals
DIP switch *	Set the 10's digit of the station No. using "STATION NO. 10', "STATION NO. 20' and "STATION NO. 40'. Set the 1's digit of the station No. using "STATION NO. 1', "STATION NO. 2', "STATION NO. 4" and "STATION NO. 8'. Factory default = All bits are OFF. Make sure to set the station No. in the range from 1 to 64. If any station No. outside the range from 1 to 64 is set, it is regarded as an error and the L ERR. LED lights. Example: When setting the station No. to "32', set the DIP switch as follows:								
	S	tation	1	0's dig	it		1's	digit	
		No.	40	20	10	8	4	2	1
		32	OFF	ON	ON	OFF	OFF	ON	OFF
	0.5ms 1.5ms OFF : 1.5 ms (fast response type) OFF : 1.5 ms (standard type)								

Set up using a slotted screwdriver with a tip width of 0.9 mm or less

## 3. Installation

The CL1X4-D1S2 can be installed to DIN rail or directly installed using mounting screws

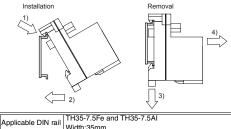
Each installation procedure is described below

# 3.1 Installation to DIN rail

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

# DIN rail mounting screw pitch

When installing the module to the DIN rail, tighten the mounting screws at the pitch of 200mm(7.87") or less



#### 3.2 Direct installation

Screw-tighten the module by attaching M4 screws to the upper and lower mounting holes (two holes in all) provided in the module. Install the module so that the clearance of 1 to 2mm (0.04" to 0.08") is assured for each module

Applicable screw	M4 × 0.7mm(0.03") × 16mm(0.63") or more
	(Tightening torgue range: 0.78 to 1.08 N·m)

# 4. Wiring

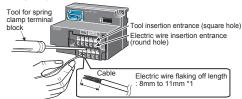
#### 4.1 Wiring operation of cable

1) Installation of cable

Insert the tool for spring clamp terminal block in the tool insertion entrance of CL1X4-D1S2 (square hole) up to the interior surely. Insert the electric wire in the electric wire insertion entrance (round hole) with the tool for spring clamp terminal block inserted, and pull out the tool.

	Clamping torque	range of t	erminal block securing screws 0.425 to			
	Name	Description				
е		PW	ON while the power is supplied.			
		L RUN	ON while normal operation is executed.			
s of and	Status indicator LED	L ERR.	ON: When a communication error or DII setting error occurred Flickering at a constant interval: When the setting of the DIP switch was of the power was supplied (even while the flickering, the operation continues. The I becomes valid when the power is turnee then ON again.) Flickering at a intermittent interval:			

Confirm the light pull of the electric wire after the tool is pulled out, and clamping surely.



\*1 When the electric wire flaking off length is too long, an electric shock or short-circuited between the adjoining terminals may result. It is likely not to come in contact surely when the electric wire flaking off length is too short.

#### 2) Detaching of cable

Insert the tool for spring clamp terminal block in the tool insertion entrance of the detached terminal number (square hole) up to the interior surely, and pull out the electric wire

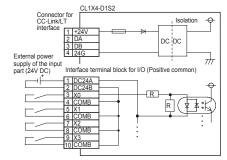
#### 3) Acceptable electric wire

Item	Specification
Size of acceptable electric wire	0.3 to 1.5 mm <sup>2</sup> (AWG22 to 16)
Electric wire flaking off length	8(0.32") to 11(0.43") mm

#### 4.2 External wiring

The input terminals of the CL1X4-D1S2 can be wired as positive common or negative common depending on the used sensor.

#### Positive common



#### Negative common

External power supply of the input part (24V DC) Interface terminal block for I/O (Negative common)

# 4.3 Connection to sensor

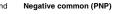
## Positive common (NPN)

· When using a two-wire type sensor · When using a three-wire type sensor Connected to DC 24A terminal Connected to DC 24A terminal Bleeder resistor \*1 Q Ø Х\* х

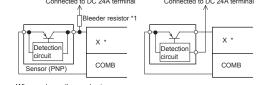


· When using a three-wire type sensor (when using the power supply fo sensor other than 24V DC)

or	Detection	X *
		COMB



· When using a two-wire type sensor · When using a three-wire type sensor Connected to DC 24A terminal Connected to DC 24A terminal



 When using a three-wire type sensor (when using the power supply for sensor

other than 24V DC)

circuit COMB

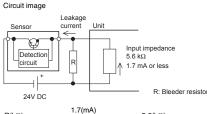
X \*

# Notes

input No.

parallel resistor, select a sensor or equipment whose leakage current is 1.7mA

If the leakage current is more than 1.7mA, connect a bleeder resistor obtained



 $R(k\Omega) <$  $\times 5.6(k\Omega)$ Leakage current(mA) - 1.7(mA)

The power capacity W of the bleeder resistor R is as follows:  $W = \frac{(Input voltage)^2}{(Input voltage)^2}$ 

R

 Please set the response speed (DIP switch) according to the ON or OFF time of the input signal. When setting 1.5 ms

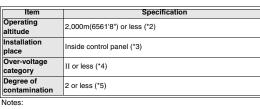
Set both the ON and OFF time of the input signal to 1.5 ms or more. When setting 0.5 ms:

Set both the ON and OFF time of the input signal to 0.5 ms or more.

# 5. Specifications

### 5.1 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:	5 to 95%RH: Dew condensation shall not be considered.			
Ambient storage humidity	5 to 95%RH: Dew condensation shall not be considered.				
	When intermittent vibration is present			Number of times of sweep	
	Frequency	Acceleration	Half amplitude		
	10 to 57Hz	-	0.075mm		
Vibration resistance (*1)	57 to 150Hz	9.8m/s <sup>2</sup>	-	10 times in each of	
resistance ( 1)	When contin	uous vibratior	X, Y and Z directions		
	Frequency	Acceleration	Half amplitude	(for 80 min)	
	10 to 57Hz	-	0.035mm		
	57 to 150Hz	4.9m/s <sup>2</sup>	-		
Impact resistance (*1)	147 m/s <sup>2</sup> , 3 times in each of X, Y and Z directions				
Operating atmosphere	Corrosive gas shall not be present.				



\*1 The criterion is shown in IEC61131-2.

- \*2 The module cannot be used in an environment pressurized above the atmospheric pressure which can be generated around the altitude of 0 m. If the module is used in such an environment, it may fail.
- \*3 The module can be used in any environment even outside the control panel as far as the requirements of the ambient operating temperature, the ambient operating humidity, etc. are satisfied.
- \*4 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.
- \*5 This index indicates the degree of conductive generating substances in the environment in which the module is used. The degree of contamination 2 indicates that contamination is caused by generation of only non-conductive substances

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

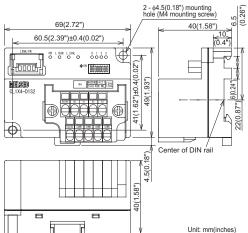
# 5.2 Input specifications

Iter	n	Specification			
Input method		DC input (External power supply of the input part)			
Number of inp	outs	4 points			
Isolation meth	od	Isolation with photocoupler			
Rated input vo	oltage	24V DC			
Rated input cu	urrent	Approx. 4 mA			
Operating vol	tage range	20.4 to 28.8V DC (24V DC -15% to +20%) Ripple ratio: Within 5%			
Max. simultaneous ON input points		100% (at 24V DC)			
ON voltage/ON current		19 V or more/3 mA or more			
OFF voltage/C	FF current	11 V or less/1.7 mA or less			
Input resistan	ce	5.6 kΩ			
	OFF→ON	0.5ms/1.5 ms or less (at 24V DC)			
Response		Selected by DIP switch (default value = OFF/1.5ms).			
time	ON→OFF	0.5ms/1.5 ms or less (at 24V DC)			
		Selected by DIP switch (default value = OFF/1.5ms)			
Common wiring method		4 points/1 common (2 points)			
		(terminal block two-wire type)			

#### 5.3 Performance specifications

	ltem	Specification	
	Voltage	20.4 to 28.8V DC (24V DC -15% to +20%)	
	voltage	Ripple ratio: Within 5%	
Module	Current	40mA (when all points are ON)	
power	consumption		
supply	Initial current	70mA	
	Max. allowable		
		PS1:1ms	
	failure period		
	of stations	4-, 8- or 16-point mode: 1 station	
occupie	a		
		500Vp-p	
Noise di	urability	Noise width: 1µs Cycle: 25 to 60 Hz	
		(by noise simulator)	
Withsta	nd voltage	500V AC for 1 min between primary area (external	
	g-	DC terminal) and secondary area (internal circuit)	
		10 M $\Omega$ or more between primary area (external	
Isolatior	resistance	DC terminal) and secondary area (internal circuit)	
		by 500V DC megger	
	on class	IP2X	
I/O part connection method		Connection with spring clamp terminal block	
Module installation method		DIN rail installation, mounted by screws of type	
		M4 × 0.7mm(0.03") × 16mm(0.63") or larger	
		Can be installed in six directions	
Mass (weight)		0.06 kg (0.13 lbs)	

# 6. Outside Dimensions



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.

#### Warranty

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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.

# 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

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	Piskarevsky pr. 2, blď 2, lit "Sch", BC "Benua", office 720; 195027, St. Petersburg, Russia Tel + 17-812-633-3497	Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road PO BOX11, Rydalmere, N.S.W 2116, Australia Tel : +61-2-9684-7777

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

Detection Replace \* in the figure with the used

#### \*1 Bleeder resistor

When connecting a two-wire type sensor or input equipment containing a or less.

in the following calculation formula.



Side B Side A JAPANESE B ENGLISH

CL1X4-D1S2

# CC-Link/LT Remote I/O Module

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

handle the product properly User's Manual

# CL1X4-D1S2

MODEL MANUAL Number JY997D10801G Date April 2015 CC-Link/LT

# **•SAFETY PRECAUTIONS•**

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	Procedures which may lead to a dangerous condition

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[DESIGN PRECAUTIONS]

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them. Otherwise, such cables may be broken or fail.

#### INSTALLATION PRECAUTIONS

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Install the module on a flat surface. If the mounting surface has concave and/or convex, an excessive force may be applied on the module, and nonconformity may be caused.

# WIRING PRECAUTIONS

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.

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Make sure foreign objects do not get inside the module, such as dirt and wire chips. It may cause fire, product failure or malfunction. Attach a warning label (hazard symbol 417-IEC-5036) concerning the electric shock to the location.

# [STARTING AND MAINTENANCE PRECAUTIONS]

• Do not touch the terminals when the power is ON. It may cause an electric shock or malfunction. Perform cleaning the module or retightening of terminal screws after turning OFF the all external power supply for sure. Failure to do so may cause failure or malfunction of the modules

**CAUTION** 

#### Do not disassemble or modify module. Doing so may cause failure

The module case is made of resin; do not drop it or subject it to strong shock A module case is made of resin; do not drop it or subject it to strong shock A module damage may result.

- 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.
- [DISPOSAL PRECAUTIONS]

# CAUTION When disposing of this product, treat it as industrial waste

[TRANSPORTATION AND MAINTENANCE PRECAUTIONS]

During transportation avoid the impact which exceeds a regulated value as the module is a precision instrument. Doing so could cause trouble in the module.

It is necessary to check the operation of module after transportation, in case of any impact damage. Otherwise, causes the damage of the machine and the accident.

Note Concerning the CE Marking

This note 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. Attention

· This product is designed for use in industrial applications

Note Authorized Representative in the European Community:

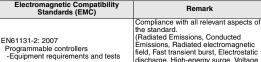
Mitsubishi Electric Europe B.V.

Gothaer Str. 8, 40880 Ratingen, Germany

Standards with which this product complies Type : Programmable Controller (Open Type Equipment) Remote I/O module Models : Products manufactured: from February 1st, 2004 to April 30th, 2006 are compliant with

EN6100-6-4 and EN61131-2:1994+A11:1996+A12:2000 after May 1st, 2006 are compliant with EN61131-2:2007				
Electromagnetic Compatibility Standards (EMC)	Remark			
	Compliance with all relevant aspects of the standard (Badiated Emissions and			

for Industrial environment	Mains Terminal Voltage Emissions)
Programmable controllers	Compliance with all relevant aspects of the standard. (RF Immunity, Fast transients, ESD and Damped oscillatory wave)



# Compared management the standard. (Radiated Emissions, Conducted Emissions, Radiated electromagnetic field, Fast transient burst, Electrostatic discharge, High-energy surge, Voltage drops and interruptions, Conducted RF and Power frequency magnetic field) 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.

- Use this product in Zone A<sup>\*1</sup> as defined in EN61131-2.
- \*1 Zone defined in EN61131-2
- Separation defined in EN61131-2 for EMC LVD regulation decided depending on condition in industrial setting. Zone C = Factory mains which is isolated from public mains by dedicated
- transformers. Zone B = Dedicated power distribution which is protected by secondary surge protection. (300V or less in the rated voltage is
- assumed.) Local power distribution which is isolated from dedicated power distribution by AC/DC converters, isolation transformers, etc.

# 1. Outline of Product

Iten Operating

Installation

Over-voltage

contamination

substances

Input method

Number of inputs

olation method

Rated input voltage

Rated input current

put points

Operating voltage range

Max, simultaneous ON

5.2 Input specifications

Item

category

Degree of

Х\*

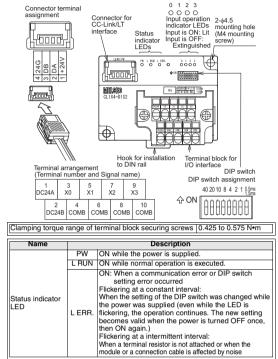
COMB

This product is a spring clamp terminal block type input module connected to CC-Link/LT.

(120V or less in the rated voltage is assumed.)

This product has four input points (24V DC).

# 2. Name and Setting of Each Part and Terminal Arrangement



Specification

2,000m(6561'8") or less (\*2)

\*2 The module cannot be used in an environment pressurized above the atmospheric pressure which can be generated around the altitude of 0 m. If the module is used in such an environment, it may fail.

\*3 The module can be used in any environment even outside the control panel as

\*4 This indicates the section of the power supply to which the equipment is

The surge voltage withstand level for up to the rated voltage of 300V is 2500V. \*5 This index indicates the degree of conductive generating substances in the environment in which the module is used. The degree of contamination 2

indicates that contamination is caused by generation of only non-conductive

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

solation with photocouple

Specification

DC input (External power supply of the input part)

20.4 to 28.8V DC (24V DC -15% to +20%)

far as the requirements of the ambient operating temperature, the ambient

assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment

Inside control panel (\*3)

for which electrical power is supplied from fixed facilities.

4 points

24V DC

Approx. 4 mA

II or less (\*4)

2 or less (\*5)

\*1 The criterion is shown in IEC61131-2.

operating humidity, etc. are satisfied.

Name Description ON while the input is ON. Extinguished while the input is 0 1 2 3 put operation 0 0 0 0 Input operation indicator Connector for CC-Link/LT communication line/module power supply (24G/DB/DA/+24V) spring clamp terminal block for connecting input signals nterface Terminal block for I/O interface and I/O power supply and I/O power supply Set the 10's digit of the station No. using "STATION NO. 10", "STATION NO. 20' and "STATION NO. 40'. Set the 1's digit of the station No. using "STATION NO. 4", "STATION NO. 2", "STATION NO. 4" and "STATION NO. 8". Factory default = All bits are OFF. Make sure to set the station No. in the range from 1 to 64. If any station No. outside the range from 1 to 64 is set, it is regarded as an error and the L ERR. LED lights. 
 Station
 10's witch as follows.

 Station
 10's digit
 1's digit

 No.
 40
 20
 10
 8
 4
 2

 32
 OFF
 ON
 ON
 OFF
 OFF
 ON
 OFF
 DIP switch

 
 Sets the response speed.

 0.5ms
 ON : 0.5 ms (fast response type)

 1.5ms
 OFF : 1.5 ms (standard type)
 \* Set up using a slotted screwdriver with a tip width of 0.9 mm or less

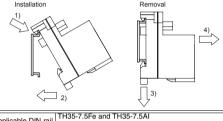
# 3. Installation

The CL1X4-D1S2 can be installed to DIN rail or directly installed using mounting screws. Each installation procedure is described below

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

# DIN rail mounting screw pitch

When installing the module to the DIN rail, tighten the mounting screws at the pitch of 200mm(7.87") or less



Applicable DIN rail Width:35mm

# 3.2 Direct installation

Screw-tighten the module by attaching M4 screws to the upper and lower mounting holes (two holes in all) provided in the module. Install the module so that the clearance of 1 to 2mm (0.04" to 0.08") is assured for each module.

Applicable screw	M4 × 0.7mm(0.03") × 16mm(0.63") or more (Tightening torque range: 0.78 to 1.08 N·m)
------------------	--

# 4. Wiring

4.1 Wiring operation of cable

# 1) Installation of cable

6. Outside Dimensions

LINK/PR

4,6000,

MIELSING

 $(\Phi)$ 

69(2.72")

60.5(2.39")±0.4(0.02")

PN L RUN L ERF.

Insert the tool for spring clamp terminal block in the tool insertion entrance of CL1X4-D1S2 (square hole) up to the interior surely. Insert the electric wire in the electric wire insertion entrance (round hole) with the tool for spring clamp terminal block inserted, and pull out the tool.

 $( \Phi )$ 

 $\bigcirc$ 

0123

\* <sup>on</sup> 00000000

IN \$10000 [6.4 2:15 See

2 - \phi 4.5(0.18") mounting hole (M4 mounting screw

40(1.58"

\_\_\_\_

Center of DIN rai

Unit: mm(inches)

#### Confirm the light pull of the electric wire after the tool is pulled out, and Negative common (PNP)



Q Electric wire flaking off length : 8mm to 11mm \*1 \*1 When the electric wire flaking off length is too long, an electric shock or

short-circuited between the adjoining terminals may result. It is likely not to come in contact surely when the electric wire flaking off length is too short.

# 2) Detaching of cable

clamping surely.

clamp termi block

Tool for spring

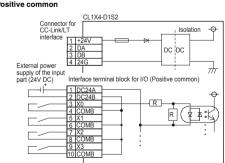
Insert the tool for spring clamp terminal block in the tool insertion entrance of the detached terminal number (square hole) up to the interior surely, and pull out the electric wire.

# 3) Acceptable electric wire

Item	Specification
Size of acceptable electric wire	0.3 to 1.5 mm <sup>2</sup> (AWG22 to 16)
Electric wire flaking off length	8(0.32") to 11(0.43") mm

4.2 External wiring

#### The input terminals of the CL1X4-D1S2 can be wired as positive common or negative common depending on the used sensor Positive common



 When using a two-wire type sensor 
 When using a three-wire type sensor Connected to DC 24A termina

EN

#### Connected to DC 24A termina Bleeder resistor \*1 Х \* X \* Detection COMB COMB Sensor (PNP) When using a three-wire type sensor (when using the power supply for sensor other than 24V DC) Detection Replace \* in the figure with the used

circuit

parallel resistor, select a sensor or equipment whose leakage current is 1.7mA

If the leakage current is more than 1.7mA, connect a bleeder resistor obtained

Input impedance

R: Bleeder resistor

5.6 kΩ

1.7 mA or less

#### Notes Bleeder resisto When connecting a two-wire type sensor or input equipment containing a

or less.

Circuit image

Sensor

Ø

Detection

24V DC

circuit

in the following calculation formula

Leakage

current

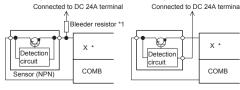
input No

#### Negative common

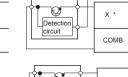


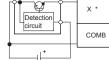
# 4.3 Connection to sensor Positive common (NPN)

· When using a two-wire type sensor · When using a three-wire type sensor



When using a three-wire type sensor (when using the power supply for sensor other than 24V DC)





The power capacity W of the bleeder resistor R is as follows  $W = \frac{(Input voltage)^2}{(Input voltage)^2}$ 

1.7(mA)

 $R(k\Omega) < \frac{1.7(mA)}{Leakage current(mA) - 1.7(mA)} \times 5.6(k\Omega)$ 

Unit

- Please set the response speed (DIP switch) according to the ON or OFF time of the input signal
- When setting 1.5 ms
- Set both the ON and OFF time of the input signal to 1.5 ms or more. When setting 0.5 ms:
- Set both the ON and OFF time of the input signal to 0.5 ms or more

# 5. Specifications

# 5.1 General specifications

Item	Specification			
Ambient working æmperature	0 to 55°C (32 to 131°F)			
Ambient storage emperature	-25 to 75°C (-13 to 167°F)			
Ambient operating numidity	5 to 95%RH: Dew condensation shall not be considered.			
Ambient storage numidity	5 to 95%RH: Dew condensation shall not be considered.			
	When intermittent vibration is present			Number of times of sweep
	Frequency	Acceleration	Half amplitude	
	10 to 57Hz	-	0.075mm	
/ibration esistance (*1)	57 to 150Hz	9.8m/s <sup>2</sup>	-	10 times in each of
esistance (1)	When contin	X, Y and Z directions		
	Frequency	Acceleration	Half amplitude	(for 80 min)
	10 to 57Hz	-	0.035mm	]
	57 to 150Hz	4.9m/s <sup>2</sup>	-	1
mpact resistance (*1)	147 m/s <sup>2</sup> , 3 times in each of X, Y and Z directions			
Operating atmosphere	Corrosive gas shall not be present.			

ON voltage/ON current		19 V or more/3 mA or more	
OFF voltage/OFF current		11 V or less/1.7 mA or less	
Input resistance		5.6 kΩ	
Response	OFF→ON	0.5ms/1.5 ms or less (at 24V DC) Selected by DIP switch (default value = OFF/1.5ms).	
time	ON→OFF	0.5ms/1.5 ms or less (at 24V DC) Selected by DIP switch (default value = OFF/1.5ms).	
		4 points/1 common (2 points) (terminal block two-wire type)	

Ripple ratio: Within 5%

100% (at 24V DC)

# 5.3 Performance specifications

Item		Specification		
	Voltage	20.4 to 28.8V DC (24V DC -15% to +20%) Ripple ratio: Within 5%		
Module power	Current consumption	10mA (when all points are ON)		
supply	Initial current	70mA		
suppry	Max. allowable momentary power failure period	PS1:1ms		
Number of stations occupied		4-, 8- or 16-point mode: 1 station		
Noise durability		500Vp-p Noise width: 1µs Cycle: 25 to 60 Hz (by noise simulator)		
Withstand voltage		500V AC for 1 min between primary area (externa DC terminal) and secondary area (internal circuit)		
Isolation resistance		10 MΩ or more between primary area (external DC terminal) and secondary area (internal circuit) by 500V DC megger		
Protection class		IP2X		
I/O part connection method		Connection with spring clamp terminal block		
Module installation method		DIN rail installation, mounted by screws of type M4 $\times$ 0.7mm(0.03") $\times$ 16mm(0.63") or larger Can be installed in six directions		
Mass (weight)		0.06 kg (0.13 lbs)		

# A For safe

products; and to other duties

Brazil

UK

Italy

Spain

France

Poland

As Av Pa Te Mi Go Te Mi Tr Al

Te Mi Vi: (M Te Mi Ca Sa Te Mi

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a result of using the contents noted in this manual

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- fails, install appropriate backup or failsafe functions in the system

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# MITSUBISHI ELECTRIC CORPORATION

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