

Open Field Network CC-Link

CC-Link

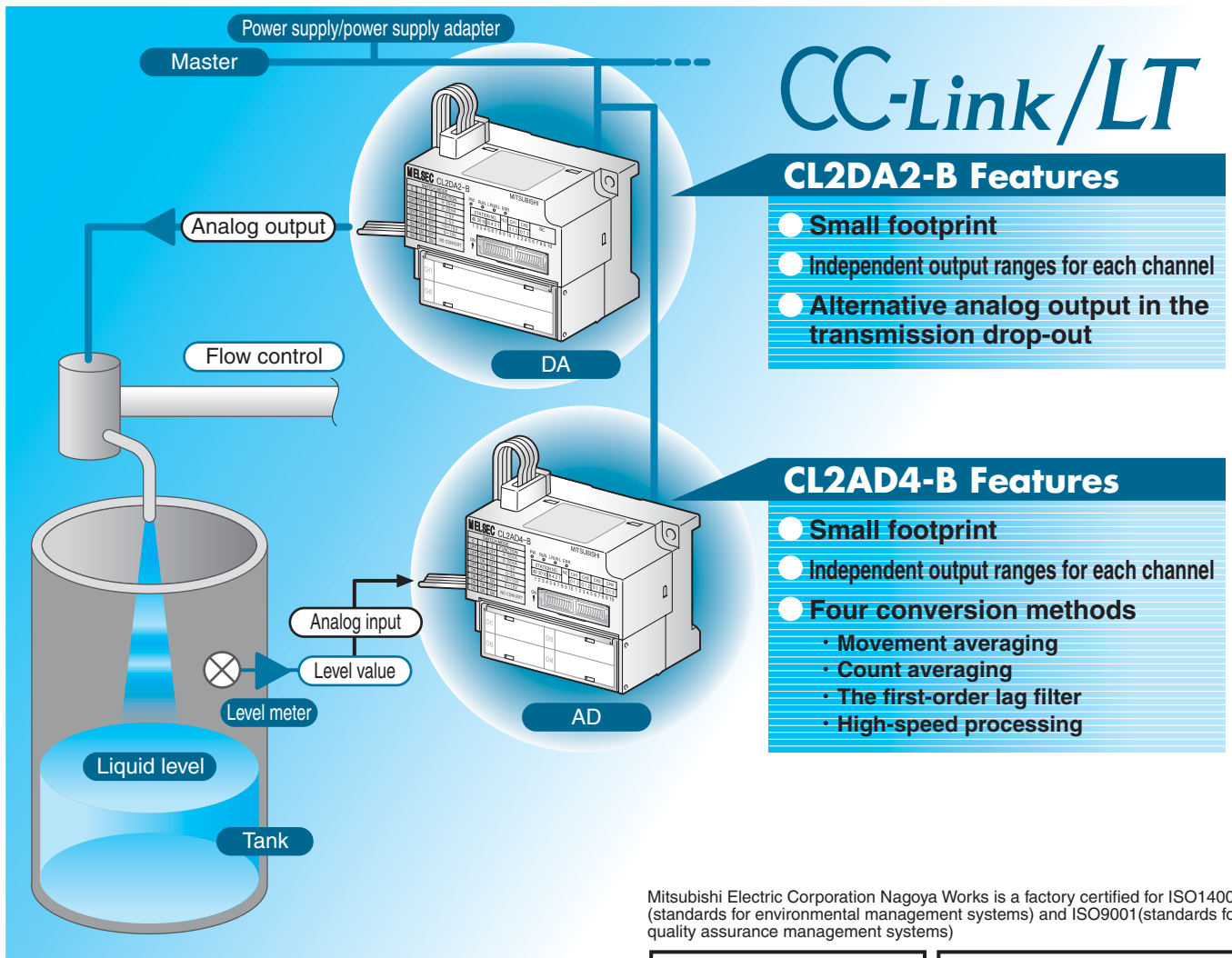
Analog-Digital Converter Module

CL2AD4-B

Digital-Analog Converter Module

CL2DA2-B

Introducing CC-Link/LT analog module



Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)



Analog-Digital Converter Module CL2AD4-B

1. Smaller than CC-Link A/D converter module

Now 55% the size of the CC-Link A/D converter module (AJ65SBT-64AD), it is equivalent to the terminal block type CC-Link/LT remote I/O modules (CL2X8-D1B2, CL2Y8-TP1B2).

2. Independent input ranges for each channel

Set the analog input range and the I/O conversion characteristics for each channel.

■ I/O characteristics

	Analog input range	Digital output
Voltage	-10 to 10V	-4000 to 4000
	0 to 10V	
	0 to 5V	
	1 to 5V	
Current	0 to 20mA	0 to 4000
	4 to 20mA	

3. Four conversion methods

The following four A/D conversion methods are available.

Conversion method	Description
Movement averaging	The last eight A/D conversion values for every 200 μs are averaged and output as a digital value.
Count averaging	Ten A/D conversions are carried out and the average is output as a digital output.
The first-order lag filter	Digital output values are smoothed based on the time constant setting.
High-speed processing	The analog inputs are constantly A/D converted, each time output as digital outputs.

Digital-Analog Converter Module CL2DA2-B

1. Smaller than CC-Link D/A converter module

Now 55% the size of the CC-Link D/A converter module (AJ65SBT-62DA), it is equivalent to the terminal block type CC-Link/LT remote I/O modules (CL2X8-D1B2, CL2Y8-TP1B2).

2. Independent output ranges for each channel

Set the analog output range and the I/O conversion characteristics for each channel.

■ I/O characteristics

	Analog output range	Digital input
Voltage	-10 to 10V	-4000 to 4000
	0 to 10V	
	0 to 5V	
	1 to 5V	
Current	0 to 20mA	0 to 4000
	4 to 20mA	

3. Alternative analog outputs in the transmission drops out

Two alternatives are available: Keeping or clearing the analog value output immediately before D/A conversion was terminated because transmission with the CC-Link/LT master module or AJ65SBT-CLB dropped out.

Common characteristics

1. Occupied points are variable.

This module has four occupied stations. Note that, if all four stations are not required, the next open station is available to other modules.

*Ensure the count mode setting is for 16 points when connecting to *CL2AD4-B and CL2DA2-B. Four-point and eight-point modes will not work.

2. Easy front panel operation

All operations, switches and wiring are on the front panel.

*A dedicated unified flat cable for CL2AD4-B, CL2DA2-B is included. Use the connector appropriate to the cable for the trunk line and the branch line connectors.

3. Dustproof for better reliability

Dustproof enclosure with no heat release openings prevents waste wirings and dust from getting into the module, improving the reliability of the module.

4. Free mounting orientation

No restrictions to the mounting orientation of the module, enabling greater flexibility in cabinet design.

CL2AD4-B Digital-Analog Converter Module

Item		Specifications					
Analog input	Voltage	-10 to 10VDC (input resistance 1MΩ)					
	Current	0 to 20mADC (input resistance 250Ω)					
Digital output		15-bit signed binary (-4096 to 4095)					
I/O characteristics, maximum resolution, accuracy (accuracy relative to maximum value of digital output value)	Voltage	Analog input range	Digital output value	Accuracy			Max. Resolution
				Ambient temperature 25±5°C *1	Ambient temperature 0 to 55°C	Temperature coefficient*2	
		-10 to 10V	-4000 to 4000	±0.2% (±8 digit*2)	±0.4% (±16 digit*2)	±80ppm/°C (±0.0080%/°C)	2.5mV
		0 to 10V					1.25mV
		0 to 5V					1.0mV
	Current	Analog input range	Digital output value	Ambient temperature 25±5°C *1	Ambient temperature 0 to 55°C	Temperature coefficient*2	5μA
	Conversion speed		200μs/4 channel**				
Absolute maximum output		Voltage:±15V, current:±30mA					
Analog output		4 channels/1 module					
CC-link/LT station type		Remote device station					
Number of occupied stations		16 point mode with four occupied stations*5					
Isolation	Specific isolated area		Isolation system	Dielectric withstand voltage	Insulation resistance		
	Between communication system terminals and all analog input terminals		Photocoupler isolated Transformer isolated	1 min. duration of 500VAC	500VDC 10MΩ or more		
	Between power supply system terminals and all analog input terminals						
	Between communication system terminals and power supply system terminals		Non-isolated	—	—		
Across channels							
Connected terminal block		Direct-coupled, 14-point terminal block (M3 screw)					
Applicable wire size		0.3 to 1.25mm ²					
Applicable crimping terminal		RAV1.25-3 (conforming to JIS C2805), V1.25-3 (manufactured by JST Mfg. CO., Ltd.), 1.25-3, TG1.25-3 (manufactured by NICHIFU CO., Ltd.)					
Installing the module		DIN rail attachment, screw mounting: No restrictions to the mounting orientation with M4 x 0.7mm x 16mm and over.					
Supported DIN rail		TH35-7.5Fe, TH35-7.5Al (conforming to JIS-C2812)					
Module power supply*5	Voltage	24VDC (20.4VDC to 28.8VDC, ripple ratio: within 5%)					
	Current consumption	0.070A					
	Start up current	0.570A					
Protection degree		IP2X					
Weight (kg)		0.15					

*1: Standard accuracy

*2: Digit indicates the digital output value.

*3: Accuracy for each 1°C temperature change

*4: The conversion speed of the first order lag filter channel is 400μs when a first order lag filter is used.

*5: The number of I/O occupied points (occupied station count) differs depending on the final channel permitted for conversion.

*6: A dedicated power supply/supply adaptor is used to supply power.

CL2DA2-B Digital-Analog Converter Module

Item		Specifications					
Digital input	Voltage	15-bit signed binary (-4096 to 4095)					
	Current	15-bit signed binary (-96 to 4095)					
Analog output	Voltage	-10 to 10VDC (external load resistance: 1kΩ to 1MΩ)					
	Current	0 to 20mADC (external load resistance: 0 to 600Ω)					
I/O characteristics, maximum resolution, accuracy (accuracy relative to maximum value of analog output value)	Voltage	Analog output range	Digital input value	Accuracy		Max. Resolution	
				Ambient temperature 25 ± 5°C*1	Ambient temperature 0 to 55°C		Temperature coefficient*2 ± 80ppm/°C (± 0.0080%/°C)
		-10 to 10V	-4000 to 4000	± 0.2% (± 20mV)	± 0.4% (± 40mV)		
		0 to 10V	0 to 4000	± 0.2% (± 10mV)	± 0.4% (± 20mV)		1.25mV
	0 to 5V	1.0mV					
	Current	0 to 20mA	0 to 4000	± 0.2% (± 40μA)	± 0.4% (± 80μA)	5μA	
		4 to 20mA				4μA	
	Conversion speed	200μs/2channel					
Output short-circuit protection	Provided						
Absolute maximum output	Voltage: ± 12V, current: + 21mA						
Analog output points	2channels/1 module						
CC-link/LT station type	Remote device station						
Number of occupied stations	16 point mode with two occupied stations*3						
Isolation	Specific isolated area		Isolation system Photocoupler isolated Transformer isolated	Dielectric withstand voltage 1 min. duration of 500VAC	Insulation resistance 500VDC 10MΩ or more		
	Between communication system terminals and all analog input terminals						
	Between power supply system terminals and all analog input terminals						
	Between communication system terminals and power supply system terminals		Non-isolated	—	—		
Across channels							
Connected terminal block	Direct-coupled, 14-point terminal block (M3 screw)						
Applicable wire size	0.3 to 1.25mm ²						
Applicable crimping terminal	RAV1.25-3 (conforming to JIS C2805), V1.25-3 (manufactured by JST Mfg. CO., Ltd.), 1.25-3, TG1.25-3 (manufactured by NICHIFU CO., Ltd.)						
Installing the module	DIN rail attachment, screw mounting: No restrictions to the mounting orientation with M4 x 0.7mm x 16mm and over.						
Supported DIN rail	TH35-7.5Fe, TH35-7.5Al (conforming to JIS-C2812)						
Module power supply*4	Voltage	24VDC (20.4VDC to 28.8VDC, ripple ratio: within 5%)					
	Current consumption	0.170A					
	Start up current	0.470A					
Protection degree	IP2X						
Weight (kg)	0.15						

*1: Standard accuracy

*2: Accuracy for each 1°C temperature change

*3: The number of I/O occupied points (occupied station count) differs depending on the final channel permitted for conversion.

*4: A dedicated power supply/supply adaptor is used to supply power.

General specifications

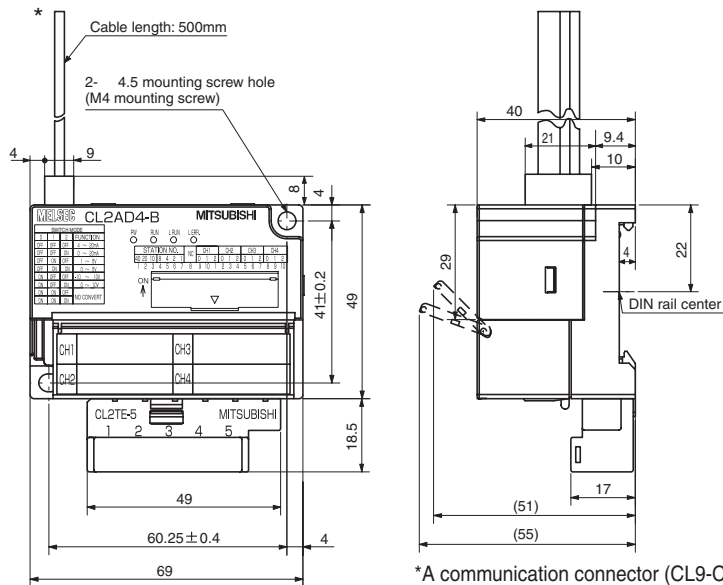
Item	Specifications					
Operating ambient temperature	0 to 55°C					
Storage ambient temperature	-25 to 75°C					
Operating ambient humidity	5 to 95%RH, non-condensing					
Storage ambient humidity	5 to 95%RH, non-condensing					
Vibration resistance	Conforming to JIS B 3502, IEC 61131-2		Frequency	Acceleration	Amplitude	Sweep count
		Under intermittent vibration	10 to 57Hz	–	0.075mm	10 times each in X, Y, Z directions (for 80 min.)
		Under continuous vibration	57 to 150Hz	9.8m/s ²	–	
			57 to 150Hz	4.9m/s ²	–	
Shock resistance	Conforming to JIS B 3502, IEC 61131-2 (147 m/s ² , 3 times in each of 3 directions X, Y, Z)					
Operating atmosphere	No corrosive gases					
Operating altitude	2000m max.*1					
Installation location	Inside control panel *2					
Overvoltage category *3	II max.					
Pollution degree *4	2 max.					

- *1. Do not operate the programmable logic controller at altitude 0m or more in a pressurized environment. It may malfunction if it is operated. Contact us when operating in a pressurized state.
- *2. It can be used in an environment other than a control panel as long as conditions such as operating ambient temperature and humidity are satisfactory.
- *3. Classification based on limiting (or controlling) the values of prospective transient overvoltages in a circuit (or within an electrical system having different nominal voltages). Category II applies to a device supplied power from a fixed facility. The surge resistance voltage is 2500V for a device having a rating up to 300V.
- *4. This index shows the frequency of electro conductive substances occurring depending on the environment the device is used in. At pollution degree 2, normally, only nonconductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.

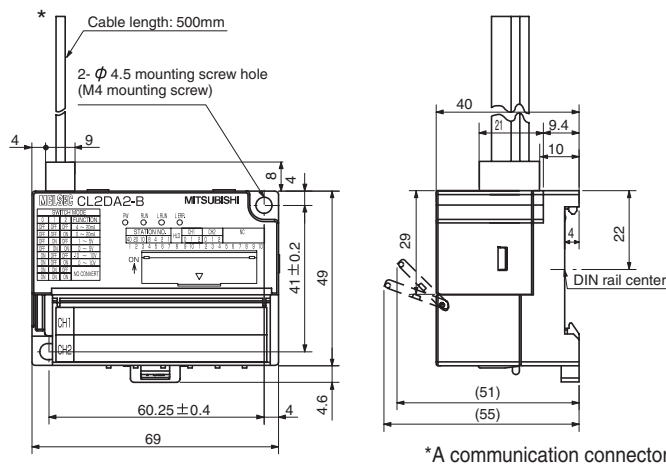
External dimensions

CL2AD4-B (The following diagram shows use of the model CL2TE-5 common terminal block.)

Unit: mm



CL2AD4-B/CL2DA2-B (Note that the diagram below shows a CL2DA2-B, however the dimensions are the same.)



Product list

Product name	Model	Model code
CL2AD4-B Analog-Digital Converter Module	CL2AD4-B	1WL013
CL2DA2-B Digital-Analog Converter Module	CL2DA2-B	1WL014

Manuals

Manual name	Manual supply status	IB/SH No.	Model code
Analog-Digital Converter Module User's Manual CL2AD4-B	Sold separately	SH-080417E	13JP30
Digital-Analog Converter Module User's Manual CL2DA2-B	Sold separately	SH-080418E	13JP31

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Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Rua Correia Dias, 184, Edificio Paraiso Trade Center-8 ander Paraiso, Sao Paulo, SP Brazil	Tel : +55-11-5908-8331 Fax : +55-11-5574-5296	Korea	Mitsubishi Electric Automation Korea Co., Ltd. Dong seo Game Channel Bldg. 2F 660-11, Deungchon-dong Kangseo-ku, Seoul 157-030, Korea	Tel : +82-2-3660-9552 Fax : +82-2-3664-8372
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