# CJ1W-AD/DA/MAD

CSM CJIW-AD DA MAD DS E 3 1

# Consistent Microsecond Throughput: Models with Direct Conversion Join the Lineup

- Analog Input Units for converting analog input signals into binary data
- Analog Output Units for converting binary data into analog output signals



# **Features**

#### **Analog Input Units**

- Input up to eight analog signals with one Unit.
- Functions include line disconnection detection, averaging, peak value holding, offset/gain adjustment, and scaling. (Offset/gain adjustment is not supported by the CJ1W-AD042. Scaling is supported only by the CJ1W-AD042.)
- High-speed A/D conversion in 20 μs/point with direct conversion function \* (CJ1W-AD042 only).

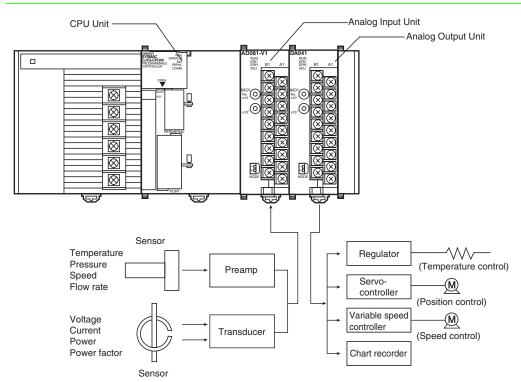
#### **Analog Output Units**

- Output up to eight analog signals with one Unit.
- Functions include output holding, offset/gain adjustment, and scaling. (Offset/gain adjustment is not supported by the CJ1W-DA042V. Scaling is supported only by the CJ1W-DA08V/DA08C/DA042V.)
- High-speed D/A conversion in 20 µs/point with direct conversion function \* (CJ1W-DA042V only).

#### Analog I/O Units

- Input up to four analog signals and output up to two analog signals with one Unit.
- Functions include line disconnection detection, input averaging, scaling, input peak value holding, output holding, ratio conversion, and offset/
- \* Direct Conversion Instructions for High-speed type can be used to create a consistent response time from input through data processing and output. With the Machine Automation Controller NJ-series, the direct conversion function cannot be used. This function is supported only by the CJ-series CPU Unit.

# **System Configuration**



Note: The above diagram is an installation example for the CJ1W-AD081-V1 Analog Input Units and CJ1W-DA041 Analog Output Units.

# **Ordering Information**

#### **International Standards**

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

## **Analog Input Units**

Unit type	Product name	I/O points	Signal range selection	Signal range	Resolution	Conversion period	Accuracy at ambient temperature	External connection	No. of unit numbers			Model	Standards
			Selection				of 25°C		allocated	5 V	24 V		
CJ1 Special	Analog Input Unit High-speed type	4 inputs	Set separately for each	1 to 5 V (1/ 0 to 10 V ( -5 to 5 V (1 -10 to 10 V and 4 to 20 mA	1/20,000), /20,000), (1/40,000),	20 μs/1 point, 25 μs/2 points, 30 μs/3 points, 35 μs/4 points The Direct conversion is provided. *1	Voltage: ±0.2% of F.S. Current: ±0.4% of F.S.	Removable terminal	1	0.52		CJ1W-AD042	UC1, CE
I/O Units	Analog Input Units	8 inputs	input	1 to 5 V, 0 to 5 V,	1/4,000 (Settable	1 ms/point (250 µs/point can also be set.) *2	I ms/point   Voltage:	block		0.42		CJ1W-AD081-V1	
		4 inputs		0 to 10 V, -10 to 10 V, 4 to 20 mA	to 1/8,000) *2							CJ1W-AD041-V1	UC1, N, L, CE

<sup>\*1</sup> With the Machine Automation Controller NJ-series, the direct conversion function using the AIDC instruction cannot be used.

# **Analog Output Units**

Unit type	Product name	I/O points	Signal range selection	Signal range	Resolution	Conversion period	Accuracy at ambient temperature	External connection	External power supply	No. of unit numbers	. —		Model	Standards
			SCICCION				of 25°C		supply	allocated	5 V	24 V		
	Analog Output Unit (High-speed type	4 outputs		1 to 5 V (1/ 0 to 10 V (1/ and -10 to 10 V	1/20,000),	20 µs/ 1 point, 25 µs/ 2 points, 30 µs/ 3 points, 35 µs/ 4 points The Direct conver- sion is provided.	±0.3% of F.S.				0.40		CJ1W-DA042V	UC1, CE
CJ1 Special I/O Units		for each	separately for each	1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V	1/4,000 (Settable	Settable (Settable to 250 µs/ point)	ole +0.3% of	Removable terminal block	24 VDC +10% -15%, 140 mA max.	1	0.14	0.14 *3	CJ1W-DA08V	UC1, N, L, CE
	Analog Output Units	8 outputs	output	4 to 20 mA	1/8,000) *2				24 VDC +10% -15%, 170 mA max.			0.17 *3	CJ1W-DA08C	UC1, N, CE
		4 outputs 2 outputs		1 to 5 V, 0 to 5 V, 0 to 10 V,	5 V,	1 ms/ point	Voltage: ±0.3% of F.S.		24 VDC +10% -15% , 200 mA max.			0.2 *3	CJ1W-DA041	UC1, N,
				-10 to 10 V, -10 to 10 V, 4 to 20 mA	1/4,000		Current: ±0.5% of F.S.		24 VDC +10% -15%, 140 mA max.		0.12	0.14 *3	CJ1W-DA021	L, CE

<sup>\*1</sup> With the Machine Automation Controller NJ-series, the direct conversion function using the AIDC instruction cannot be used.

<sup>\*2</sup> The resolution and conversion speed cannot be set independently. If the resolution is set to 1/4,000, then the conversion speed will be 1 ms/point.

<sup>\*3</sup> At 23 ±2°C

<sup>\*2</sup> The resolution and conversion speed cannot be set independently. If the resolution is set to 1/4,000, the conversion speed will be 1 ms/point.

<sup>\*3</sup> This is for an external power supply, and not for internal current consumption.

# **Analog I/O Units**

Unit type	Product name	I/O points	Signal range selection	Signal range	Resolution	Conversion period	Accuracy at ambient temperature	External connection	No. of unit numbers	Current consumption (A)		Model	Standards
			Selection				of 25°C		allocated	5 V	24 V		
CJ1	Analog I/O Units	4 inputs	, ,	0 to 5 V,	1/4,000 (Settable	1 ms/ point (Settable to 500 μs/ point)	Voltage: ±0.2% of F.S. Current: ±0.2% of F.S.	Removable				CJ1W-MAD42	UC1, N,
Special I/O Units		2 outputs	for each input and output	0 to 10 V, -10 to 10 V, 4 to 20 mA	to		Voltage: ±0.3% of F.S. Current: ±0.3% of F.S.	terminal block	1	0.58	_		L, CE

Note: The resolution and conversion speed cannot be set independently. If the resolution is set to 1/4,000, then the conversion speed will be 1 ms/point.

# **Accessories**

Model	Accessories
CJ1W-AD081-V1/AD041-V1 CJ1W-DA08V/DA08C/DA041/DA021 CJ1W-DA042V CJ1W-MAD42	None.
CJ1W-AD042	Four jumpers (For a current input, a jumper is used to connect the current input positive terminal and the voltage input positive terminal.)

# **Mountable Racks**

	NJ s	ystem	CJ system	(CJ1, CJ2)	CP1H system	NSJ s	ystem
Model	CPU Rack	Expansion Rack	CPU Rack	Expansion Backplane	CP1H PLC	NSJ Controller	Expansion Backplane
CJ1W-AD042	7 Units *4	10 Units *5 (per Expansion Rack)	8 Units *1	9 Units *2 (per Expansion Backplane)			9 Units *2 (per Expansion Backplane)
CJ1W-AD081-V1	9 Units *4	10 Units *5					
CJ1W-AD041-V1	9 Units 4	(per Expansion Rack)					
CJ1W-DA042V				10 Units *2			10 Units *2
CJ1W-DA08V		10 Units *5	10 Units *1	(per Expansion Backplane)	2 Units *3	Not supported	(per Expansion
CJ1W-DA08C	10 Units *4	(per Expansion					Backplane)
CJ1W-DA041		Rack)					
CJ1W-DA021							
CJ1W-MAD42	7 Units *4	10 Units *5 (per Expansion Rack)	7 Units *1	8 Units *2 (per Expansion Backplane)			8 Units *2 (per Expansion Backplane)

- Note: It may not be possible to mount this many Units to a Rack depending on the current consumption of the other Units.

  \*1 This is the number of Units for a CJ2H-CPU6□ CJ2H CPU Unit (without EtherNet/IP) and a CJ1W-PA205□ or CJ1W-PD025 Power Supply Unit.

- This is the number of Units for a CJ2H-CP06□ CJ2H CP0 Unit (without EtherNevir) and a CJ1W-PA205□ This is the number of Units for a CJ1W-PA205□ or CJ1W-PD025 Power Supply Unit.

  A CP1W-EXT01 CJ Unit Adaptor is required.

  This is the number of Units for a NJ501 CPU Unit, and a NJ-PA3001 or NJ-PD3001 Power Supply Unit.
- \*5 This is the number of Units for a NJ-PA3001 or NJ-PD3001 Power Supply Unit.

# **Individual Specifications**

# Analog Input Units CJ1W-AD041-V1/AD081-V1/AD042

## **Specifications**

	Item		CJ1W-AD041-V1	CJ1W-AD081-V1	CJ1	W-AD042				
Unit type			CJ-series Special I/O Unit							
Isolation *1			Between I/O and Controller signals: I (No isolation between I/O signals.)	Photocoupler	Between I/O and Controller signals: Digital isolator (No isolation between I/O signals.)					
External termin	nals		18-point detachable terminal block (N	//3 screws)						
Power consum	ption		420 mA max. at 5 VDC	420 mA max. at 5 VDC 520 mA max. at 5 VDC						
Dimensions (m	ım)		$31 \times 90 \times 65 \text{ mm } (W \times H \times D)$							
Weight			140 g max.		150 g max.					
General specifications			Conforms to general specifications for	or CJ Series.						
	Number of analog inputs		4	4						
	Input signal range *2		1 to 5 V 0 to 5 V 0 to 10 V -10 to 10 V 4 to 20 mA *3	1 to 5 V 0 to 10 V -5 to 5 V -10 to 10 V 4 to 20 mA *4						
	Maximum rate (for 1 point) *		Current Input: ±13 v							
	Input impedar	nce	Voltage Input: 1 MΩ min. Current In	nput: 250 Ω (rated value)						
Input					1 to 5 V	10,000				
specifications					0 to 10 V	20,000				
	Resolution		4,000/8,000 *6	–5 to 5 V	20,000					
					-10 to 10 V	40,000				
					4 to 20 mA	10,000				
	Converted ou	tput data	16-bit binary data							
	Accuracy *7	25°C *8	Voltage Input: ±0.2% of F.S.Current	Input: ±0.4% of F.S.						
	Accuracy 7	0°C to 55°C	Voltage Input: ±0.4% of F.S.Current							
	A/D conversion	on period *9	1 ms/250 μs per point *6	20 μs/1 point, 25 μs/2 points, 30 μs/3 points, 35 μs/4 points						
	Mean value pi	rocessing	Stores the last "n" data conversions in of the conversion values. Buffer number: n = 2, 4, 8, 16, 32, 64	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Buffer number: n = 2, 4, 8, 16, 32, 64, 128, 256, 512						
	Peak value ho	olding	Stores the maximum conversion value	e while the Peak Value Hold Bit is ON						
	Scaling		-		Setting values in any specified unit within a range of ±32,000 as the upper and lower limits allows A/D conversion to be executed and analog signals to be output with these values as full scale.					
Input	Input disconne	ection detection	Detects the disconnection and turns	ON the Disconnection Detection Flag.	*10					
functions	Offset/gain ad	ljustment	Supported							
	Direct conver	sion	A/D conversion is perfecton converted value is refit the ANALOG INPUT I VERSION instruction cuted. This instruction cuted. This instruction by the CJ2H-CPU—Units with unit version and CJ2M-CPU—CJ1, NJ501, and CP1 and NSJ Controllers described to the conversion of the conversion convers							
			1	direct conversion.						

<sup>\*1</sup> Do not apply a voltage higher than 600 V to the terminal block when performing withstand voltage test on this Unit. Otherwise, internal elements may deteriorate.

\*2 Input signal ranges can be set for each input.

\*3 Voltage input or current input are chosen by using the voltage/current switch at the back of the terminal block.

\*4 To use a current input, connect the positive current input terminal and positive voltage input terminal with the enclosed short bar.

\*6 The resolution can be set to 8,000 and the conversion period to 250 μs in the setting. There is only one setting for both of these, i.e., they are both enabled or disabled together.

\*8 For the CJ1W-AD041-V1/ AD081-V1, 23±2°C.

<sup>\*5</sup> The Analog Input Unit must be operated according to the input specifications provided here. Operating the Unit outside these specifications will cause the Unit to malfunction.

<sup>\*7</sup> The accuracy is given for full scale. For example, an accuracy of ±0.2% means a maximum error of ±8 (BCD) at a resolution of 4,000. For the CJ1W-AD041-V1/ AD081-V1, the default setting is adjusted for voltage input. To use current input, perform the offset and gain adjustments as required.

<sup>\*9</sup> The A/D conversion period is the time required from when the Analog Input Unit receives the analog signal until it stores the converted value in internal memory. It takes at least one cycle for the converted data to be stored in the CPU Unit. (The direct conversion function of the CJ1W-AD042 is can be used to input data immediately to the CPU Unit.)

<sup>\*10</sup> Line disconnection detection is supported only when the range is set to 1 to 5 V or 4 to 20 mA. If there is no input signal when the 1 to 5 V or 4 to 20 mA range is set, the Line Disconnection Flag will turn ON.

# Analog Output Units CJ1W-DA021/DA041/DA08V/DA08C/DA042V

# **Specifications**

	Item		CJ1W-DA021	CJ1W-DA041	CJ1W-DA08V	CJ1W-DA08C	CJ1W-	-DA042V					
Unit type			CJ-series Special I/O	Unit			<del>,</del>						
Isolation *1			Between I/O and Con	troller signals: Photo	coupler (No isolation b	etween I/O signals.)	Between I/O and Controller sig- nals: Digital isolator (No isola- tion between I/O signals.)						
External ter	rminals		18-point detachable to	erminal block (M3 scr	rews)								
Power cons	sumption		5 VDC, 120 mA max.		5 VDC, 140 mA max		5 VDC, 400 mA max.						
External na	wor oupply *0		24 VDC +10% (inrush o	current: 20 A max., p	ulse width: 1 ms min.)								
External po	wer supply *2		140 mA max.	170 mA max.									
Dimensions	s (mm)		31 × 90 × 65 mm (W >	$31 \times 90 \times 65 \text{ mm } (W \times H \times D)$									
Weight			150 g max.										
General sp	ecifications		Conforms to general s	Conforms to general specifications for CJ-series Series.									
	Number of a	nalog outputs	2	4	8	8	4						
	Output signa	al range *3	1 to 5 V/4 to 20 mA 0 to 5 V 0 to 10 V -10 to 10 V		1 to 5 V 0 to 5 V 0 to 10 V -10 to 10 V	4 to 20 mA	1 to 5 V 0 to 10 V –10 to 10 V						
	Output impe	dance	$0.5~\Omega$ max. (for voltag	e output)	$0.5~\Omega$ max. (for voltage output)		0.5 $\Omega$ max. (for voltage out	tput)					
	Max. output point)	current (for 1	12 mA (for voltage ou	tput)	2.4 mA (for voltage output)		2 mA (for voltage out	tput)					
Output	Maximum pe load resistar		600 Ω (current output)	)		350 Ω							
specifica-						•	1 to 5 V	10,000					
tions			4,000 4,000/8,000 *8			0 to 10 V	20,000						
							-10 to 10 V	40,000					
	Set data		16-bit binary data	6-bit binary data									
	Accuracy	25°C	Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S.		±0.3% of F.S.	±0.3% of F.S.	±0.3% of F.S.						
	*4	0°C to 55°C	Voltage output: ±0.5% Current output: ±0.8%		±0.5% of F.S. ±0.6% of F.S.		±0.5% of F.S.						
	D/A conversi	on period *5	1.0 ms per point		1.0 ms or 250 μs per	point *8	20 μs/1 point, 25 μs/2 points, 30 μs/3 points, 35 μs/4 points						
	Output hold	function	Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.  • When the Conversion Enable Bit is OFF. *6  • In adjustment mode, when a value other than the output number is output during adjustment. *7  • When output setting value error occurs or Controller operation stops.  • When the Load is OFF.										
	Scaling			-	1 ms and resolution Setting values in any range of ±32,000 as	specified unit within a the upper and lower version to be execut- ls to be output with	Setting values in any specified unit within a range of ±32,000 as the upper and lower limits allows D/A conversion to be executed and analog signals to be output with these values as full scale.						
Output functions	Output Offset/gain adjustment		Supported										
Direct conversion			D/A conversion is performed and the output value is refreshed when the ANALOG OUTPUT DIRECT CONVERSION instruction (AODC) is executed. This instruction is supported by the CJ2H-CPU (EIP) CPU Units with unit version 1.1 or later, and CJ2M-CPU (I), nJ501, and CP1H CPU Units and NSJ Controllers do not support direct conversion.										

<sup>\*1</sup> Do not apply a voltage higher than 600 V to the terminal block when performing withstand voltage test on this Unit.

Select a 24 VDC power supply based on the surge current. The following OMRON external power supplies are recommended.

Manufacturer	Model number	Specifications
	S8VS-06024	100 to 240 VAC, 60 W
OMBON	S8VS-12024	100 to 240 VAC, 120 W
OMRON	S8VM-05024	100 to 240 VAC, 50 W
	S8VM-10024	100 to 240 VAC, 100 W

The maximum number of Analog Output Units that can be mounted to one Rack varies depending on the current consumption of the other

Output signal ranges can be set for each output.

The accuracy is given for full scale. For example, an accuracy of ±0.3% means a maximum error of ±60 mV for a –10 to 10 V range. For the CJ1W-DA021/041, the accuracy is at the factory setting for a current output. When using a voltage output, adjust the offset gain as required.

# Analog I/O Unit CJ1W-MAD42

# **Specifications**

Item	CJ1W-MAD42		
Unit type	CJ-series Special I/O Unit		
Between I/O and Controller signals: Photocoupler (No isolation between I/O signals.)			
External terminals 18-point detachable terminal block (M3 screws)			
Current consumption 580 mA max. at 5 V DC			
Dimensions (mm)	$31 \times 90 \times 65 \text{ mm (W} \times H \times D)$		
Weight 150 g max.			
General specifications	Conforms to general specifications for CJ-series Series.		

# **Input Specifications and Functions**

Item	า	Voltage input	Current input				
Number of analo	g inputs	4	-				
Input signal range *1		1 to 5 V 0 to 5 V 0 to 10 V -10 to 10 V 4 to 20 mA *2					
Maximum rated i point) *3	input (for 1	±15 V	±30 mA				
Input impedance		1 M $\Omega$ min.	250 $\Omega$ (rated value)				
Resolution		4,000/8,000 *7					
Converted output	ıt data	16-bit binary data					
A 0 0 1 1 0 0 1 4 1	25°C	±0.2% of F.S.					
Accuracy *4	0°C to 55°C	±0.4% of F.S.					
A/D conversion	period *5	1.0 ms/500 μs per point *7					
Mean value proc	essing	Stores the last "n" data conversions in the buffer, and stores the mean value of the conversion values. Buffer number: n = 2, 4, 8, 16, 32, 64					
Peak value holdi	ng	Stores the maximum conversion value while the Peak Value Hold Bit is ON.					
Scaling		Enabled only for conversion period of 1 ms and resolution of 4,000. Setting any values within a range of ±32,000 as the upper and lower limits allows the A/D conversion result to be output with these values as full scale.					
Input disconnect	tion detection	Detects the disconnection and turns ON the Disconnection Detection Flag.					
Offset/gain adjustn	nent	Supported					

<sup>\*5</sup> The D/A conversion period is the time required for the Analog Output Unit to convert and output the data that was received from the CPU Unit. It takes at least one cycle for the data stored in the CPU Unit to be read by the Analog Output Unit. (The direct conversion function of the CJ1W-DA042V can be used to output data immediately from the CPU Unit.)
\*6 When the operation mode for the CPU Unit is changed from RUN mode or MONITOR mode to PROGRAM mode, or when the power is turned ON, the Output Conversion Enable Bit will turn OFF. The output status specified according to the output hold function will be output.
\*7 The CJ1W-DA042V does not have an Adjustment Mode.
\*8 The CJ1W-DA092V can be set to a distriction under the capture.

<sup>\*8</sup> The CJ1W-DA08V/08C can be set to a conversion cycle of 250 μs and a resolution of 8,000 using the setting.

#### **Output Specifications**

Item	1	Voltage output	Current output					
Number of analog	g outputs	2						
Output signal ran	nge *1	1 to 5 V 0 to 5 V 0 to 10 V -10 to 10 V	4 to 20 mA					
Output impedance	ce	0.5 Ω max.	-					
Maximum externa current (for 1 poi		2.4 mA	-					
Maximum allowe resistance	d load	_	600 Ω					
Resolution		4,000/8,000 *7						
Set data		16-bit binary data						
Accuracy *4	25°C	±0.3% of F.S.	±0.3% of F.S.					
Accuracy 4	0°C to 55°C	±0.5% of F.S.	±0.6% of F.S.					
D/A conversion p	period *5	1.0 ms/500 μs per point						
Output hold fund	etion	Outputs the specified output status (CLR, HOLD, or MAX) under any of the following circumstances.  • When the Conversion Enable Bit is OFF. *6  • In adjustment mode, when a value other than the output number is output during adjustment.  • When output setting value error occurs or Controller operation stops.  • When the Load is OFF.						
Scaling		Enabled only for conversion period or 1 ms and resolution of 4,000. Setting any values within a range of ±32,000 as the upper and lower limits allows D/A conversion to be executed and analog signals to be output with these values as full scale.						
Ratio conversion function *5		Stores the results of positive and negative gradient analog inputs calculated for ratio and bias as analog output values.  Positive gradient: Analog output = A × Analog input + B  (A: 0 to 99.99, B: 8000 to 7FFF hex)  Negative gradient: Analog output = F - A × Analog input + B  (A: 0 to 99.99, B: 8000 to 7FFF hex, F: Output range maximum value)						
Offset/gain adjustm	nent	Supported						

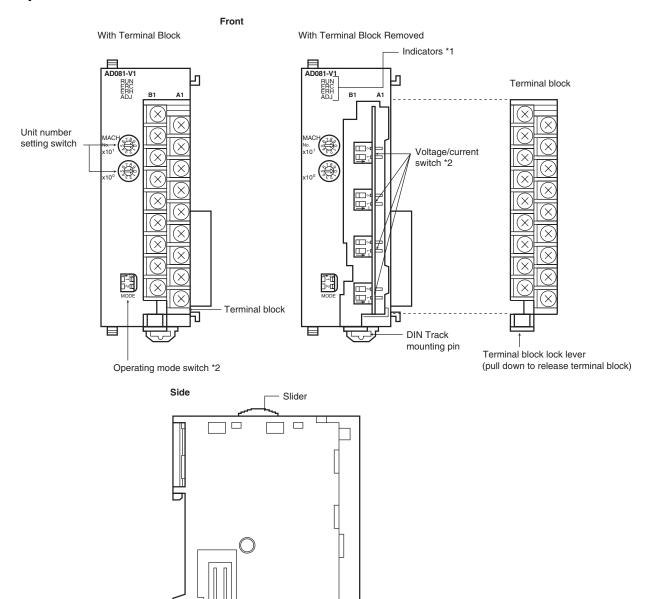
- Input and output signal ranges can be set for each input and output.
- Voltage input or current input are chosen by using the voltage/current switch at the back of the terminal block.
- The Analog I/O Unit must be operated according to the input specifications provided here. Operating the Unit outside these specifications will cause the Unit to malfunction. \*3
- The accuracy is given for full scale. For example, for an input, an accuracy of ±0.2% means a maximum error of ±8 (BCD) at a resolution of 4,000. For an output, an accuracy of ±0.3% means a maximum error of ±60 mV for a –10 to 10 V range.

  The A/D conversion period is the time required from when the Analog Input Unit receives the analog signal until it stores the converted value
- in internal memory. It takes at least one cycle for the converted data to be stored in the CPU Unit.

  The D/A conversion period is the time required from when the Analog Output Unit to convert and output the data that was received from the CPU Unit. It takes at least one cycle for the data stored in the CPU Unit to be read by the Analog Output Unit. When the operation mode for the CPU Unit is changed from RUN mode or MONITOR mode to PROGRAM mode, or when the power is turned ON, the Output Conversion Enable Bit will turn OFF. The output status specified according to the output hold function will be output. By means of the setting, the resolution can be changed to 8,000, and the conversion period can be changed to 500 us
- By means of the setting, the resolution can be changed to 8,000, and the conversion period can be changed to 500 µs.

# **External Interface**

# Analog Input Units CJ1W-AD041-V1/AD081-V1/AD042 Components



- \*1 The ADJ LED is not provided with the CJ1W-AD042.
  \*2 These switches are not mounted for the CJ1W-AD042.

# **Indicators**

Expansion connector

The indicators show the operating status of the Unit. The following table shows the meanings of the indicators.

Slider

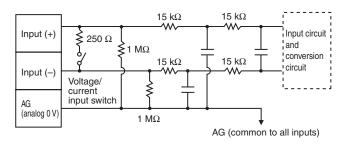
LED	Meaning	Indicator	Operating status
DLIN (groop)	Operating	Lit	Operating in normal mode.
RUN (green)	Operating	Not lit	Unit has stopped exchanging data with the CPU Unit.
ERC (red)	Error detected by Unit	Lit	Alarm has occurred (such as disconnection detection) or initial settings are incorrect.
		Not lit	Operating normally.
ERH (red)	Error in the CPU Unit	Lit	Error has occurred during data exchange with the CPU Unit.
Enn (led)	End in the CPO Onit	Not lit	Operating normally.
AD I (valley) *	Adination	Flashing	Operating in offset/gain adjustment mode.
ADJ (yellow) *	Adjusting	Not lit	Other than the above.

<sup>\*</sup> The ADJ LED is not provided with the CJ1W-AD042.

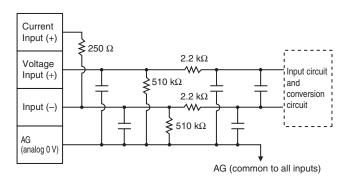
# **Input Circuits**

The following diagrams show the internal circuit of the analog input section.

#### CJ1W-AD041-V1/AD081-V1



## CJ1W-AD042



# **Terminal Arrangement**

The signal names corresponding to the connecting terminals are as shown in the following diagram.

#### CJ1W-AD041-V1

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#### CJ1W-AD081-V1

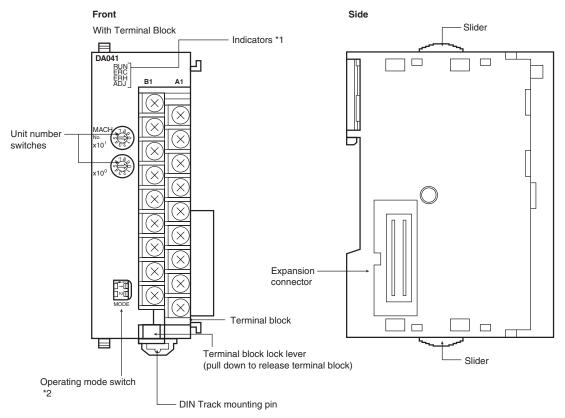
Input 2 (+)	B1		
Input 2 (–)	B2	A1	Input 1 (+)
. , ,	B3	A2	Input 1 (–)
Input 4 (+)		А3	Input 3 (+)
Input 4 (–)	B4	A4	Input 3 (–)
AG	B5		. , , ,
Input 6 (+)	В6	A5	AG
	B7	A6	Input 5 (+)
Input 6 (–)		A7	Input 5 (–)
Input 8 (+)	B8	A8	Input 7 (+)
Input 8 (–)	В9	A9	. , ,
		A9	Input 7 (–)

#### CJ1W-AD042

Current Innut O ( )	B1		
Current Input 2 (+)	D1	A1	Current Input 1 (+)
Voltage Input 2 (+)	B2		1 ( )
Input 2 (–)	ВЗ	A2	Voltage Input 1 (+)
111put 2 (-)		А3	Input 1 (–)
AG	B4	A4	40
Current Input 4 (+)	B5	A4	AG
1 ( )		A5	Current Input 3 (+)
Voltage Input 4 (+)	B6	A6	M II
Input 4 (–)	B7	At	Voltage Input 3 (+)
mpat 1 ( )		A7	Input 3 (–)
AG	B8	A8	AG
N.C.	В9		AG
		A9	N.C.

- **Note: 1.** Set the analog input number that you use and input signal range for each analog input, using the memory area or support software. The input signal range can be set separately for each input number.
  - 2. The AG terminals are connected to the 0 V analog circuit in the Unit. Connecting shielded input lines can improve noise resistance.
  - 3. Do not connect anything to NC terminals.
  - 4. To use a current input with the CJ1W-AD042, connect the positive current input terminal and positive voltage input terminal with the enclosed short bar.
  - **5.** Connect a surge suppressor to inductive loads in the system (e.g., magnetic contactors, relays, and solenoids).

# Analog Output Units CJ1W-DA021/041/08V/08C/DA042V Components



- \*1 The ADJ LED is not provided with the CJ1W-DA042V.
- \*2 This switch is not mounted for the CJ1W-DA08V, CJ1W-DA08C and CJ1W-DA042V.

# **Indicators**

The indicators show the operating status of the Unit. The following table shows the meanings of the indicators.

LED	Meaning	Indicator	Operating status
DLIN (groon)	DIM (many)		Operating in normal mode.
RUN (green)	Operating	Not lit	Unit has stopped exchanging data with the CPU Unit.
ERC (red)	d) Error detected by Unit		Alarm has occurred (such as disconnection detection) or initial settings are incorrect.
		Not lit	Operating normally.
EDII (rod)	ERH (red) Error in the CPU Unit		Error has occurred during data exchange with the CPU Unit.
ERH (red)			Operating normally.
ADJ (yellow) * Ad	Adiustina	Flashing	Operating in offset/gain adjustment mode.
	Adjusting	Not lit	Other than the above.

<sup>\*</sup> The ADJ LED is not provided with the CJ1W-DA042V.

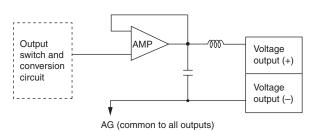
# **Output Circuits**

The following diagrams show the internal circuit of the analog output section.

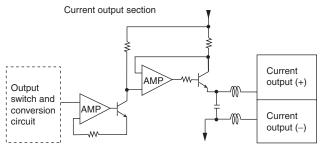
### CJ1W-DA021/DA041/DA08V/DA08C

#### **Voltage Output Circuits**

Voltage output section

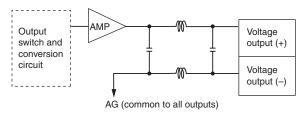


#### **Current Output Circuits**



### CJ1W-DA042V

#### **Voltage Output Circuits**



# **Terminal Arrangement**

The signal names corresponding to the connecting terminals are as shown in the following diagram.

#### **CJ1W-DA021**

Voltage output 2 (+)	B1		
Voltage output 2 (+)	ы	A1	Voltage output 1 (+)
Output 2 (–)	B2		0 1 ( )
Current output 2 (+)	В3	A2	Output 1 (–)
,		АЗ	Current output 1 (+)
N.C.	B4	A4	N.C.
N.C.	B5	74	14.0.
N.O.	- Do	A5	N.C.
N.C.	B6	A6	N.C.
N.C.	B7	- 10	14.0.
N.O.	- Do	A7	N.C.
N.C.	B8	A8	N.C.
0 V	В9		14.0.
	ļ	A9	24 V

#### **CJ1W-DA041**

Voltage output 2 (+)	B1		
Voltage output 2 (1)	D1	A1	Voltage output 1 (+)
Output 2 (–)	B2	40	0 1 14 ( )
Current output 2 (+)	В3	A2	Output 1 (–)
,		АЗ	Current output 1 (+)
Voltage output 4 (+)	B4	A4	Voltage output 3 (+)
Output 4 (–)	B5	A4	Voltage output 5 (+)
		A5	Output 3 (–)
Current output 4 (+)	B6	A6	Current output 3 (+)
N.C.	В7	Α0	Ourient output 5 (+)
N.O.	DO.	A7	N.C.
N.C.	B8	A8	N.C.
0 V	B9	7.0	14.0.
			24 V

# CJ1W-DA08V (Voltage Output) and CJ1W-DA08C (Current Output)

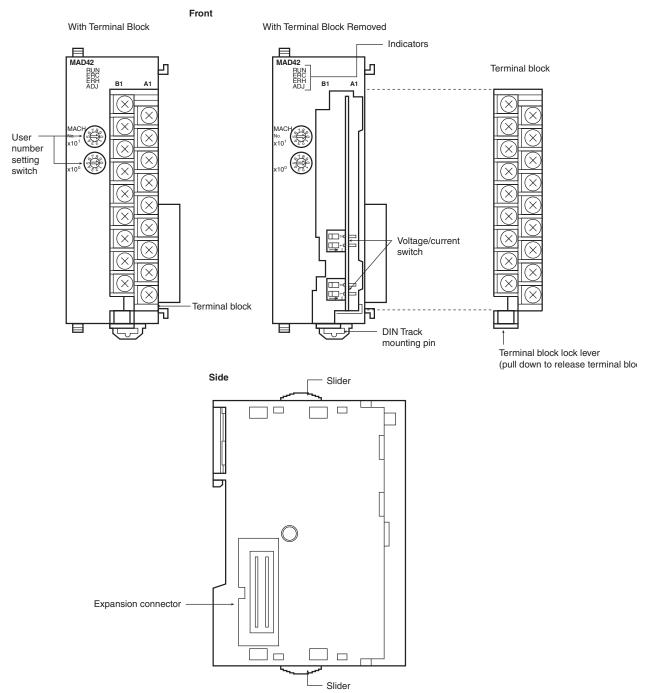
Output 2 (+)	B1		
		A1	Output 1 (+)
Output 2 (–)	B2	A2	Output 1 (–)
Output 4 (+)	В3	72	Output 1 (-)
Output 4 (–)	B4	A3	Output 3 (+)
Output 4 (-)		A4	Output 3 (–)
Output 6 (+)	B5	A5	Output 5 (.)
Output 6 (–)	В6	Ab	Output 5 (+)
Output 0 ( )	B7	A6	Output 5 (–)
Output 8 (+)	Б/	A7	Output 7 (+)
Output 8 (–)	B8		
0 V	B9	A8	Output 7 (–)
		A9	24 V

#### CJ1W-DA042V

Outrout O ( )	B1	1	
Output 2 (+)	ы	A1	Output 1 (+)
Output 2 (–)	B2	<del> </del>	- Catpat : (1)
N.C.	B3	A2	Output 1 (–)
N.C.	Б3	АЗ	N.C.
Output 4 (+)	B4	<u> </u>	
Output 4 (–)	B5	A4	Output 3 (+)
Output 4 (-)	Б5	A5	Output 3 (–)
N.C.	В6	<b>-</b>	,
N.C.	B7	A6	N.C.
14.0.	D/	A7	N.C.
N.C.	B8	<b>—</b>	
N.C.	B9	A8	N.C.
14.0.		A9	N.C.

- Note: 1. Set the analog input number that you use and input signal range for each analog input, using the memory area or support software. The input signal range can be set separately for each input number.
  - 2. The N.C. terminals are not connected to internal circuit.
  - 3. Use a separate power supply from the one used for Basic I/O Units. Faulty Unit operation may be caused by noise if power is supplied from the same source. (This does not apply to CJ1W-DA042V.)
  - 4. Connect a surge suppressor to inductive loads in the system (e.g., magnetic contactors, relays, and solenoids).

# Analog I/O Unit CJ1W-MAD42 Components



# **Indicators**

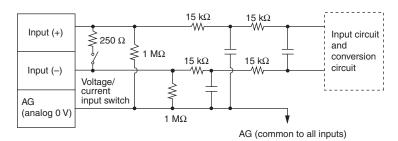
The indicators show the operating status of the Unit. The following table shows the meanings of the indicators.

LED	Meaning	Indicator	Operating status
DLIN (groop)	INI (ava an)		Operating in normal mode.
RUN (green)	Operating	Not lit	Unit has stopped exchanging data with the CPU Unit.
ERC (red)	Error detected by Unit	Lit	Alarm has occurred (such as disconnection detection) or initial settings are incorrect.
	,		Operating normally.
AD L (vallous)	Adjusting	Flashing	Operating in offset/gain adjustment mode.
ADJ (yellow)	ADJ (yellow) Adjusting		Other than the above.
EDIT (see d)	Freez in the CDI I I hit	Lit	Error has occurred during data exchange with the CPU Unit.
ERD (led)	ERH (red) Error in the CPU Unit		Operating normally.

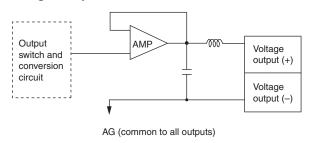
# I/O Circuit

The following diagrams show the internal circuit of the analog I/O section.

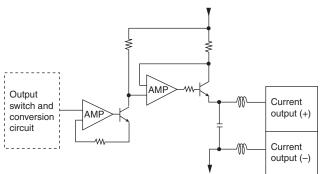
### **Input Circuits**



# **Voltage Output Circuits**



# **Current Output Circuits**



# **Terminal Arrangement**

The signal names corresponding to the connecting terminals are as shown in the following diagram.

#### CJ1W-MAD42

Voltage output 2 (+)	B1		<del></del>
Output 2 (–)	B2	A1	Voltage output 1 (+)
Output 2 (–)	D2	A2	Output 1 (–)
Current output 2 (+)	В3	AZ	Output 1 (-)
N.C.	B4	АЗ	Current output 1 (+)
N.C.	D4	A4	N.C.
Input 2 (+)	B5	A4	N.C.
		A5	Input 1 (+)
Input 2 (–)	B6		P ( )
AG	B7	A6	Input 1 (–)
AG	D,	A7	AG
Input 4 (+)	B8	A/	Ad
1 ( )		A8	Input 3 (+)
Input 4 (–)	B9		/
		A9	Input 3 (–)

- Note: 1. Set the analog input number that you use and input signal range for each analog input, using the memory area or support software. The input signal range can be set separately for each input number.
  - 2. The AG terminal (A7, B7) is connected to the 0 V analog circuit in the Unit. Connecting shielded input lines can improve noise resistance.
  - 3. The N.C. terminals (A4, B4) are not connected to internal circuit.

# Wiring Vasic I/O Units with Terminal Blocks

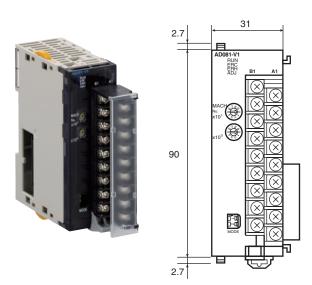
#### **Crimp terminals**

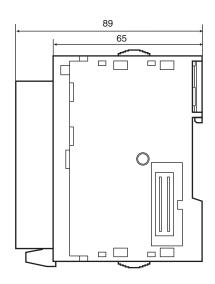
Use crimp terminals (M3) having the dimensions shown below.

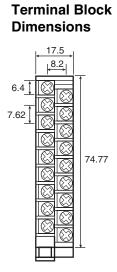


Dimensions (Unit: mm)

CJ1W-AD041-V1/081-V1/AD042 CJ1W-DA021/041/08V/08C/DA042V CJ1W-MAD42







Note: The appearance varies with the model.

# **Related Manuals**

Manual name	Cat. No.	Manual name	Application	Description
CJ-series Analog I/O Units Operation Manual for NJ-series CPU Unit	W490	CJ1W-AD0 CJ1W-DA0 CJ1W-MAD42	Learning about the functions and usage of CJseries Analog Input Units, Analog Output Units, and Analog I/O Units for using them in an NJ-series configuration.	The functions and usage of the CJ- series Analog Input Units, Analog Output Units, and Analog I/O Units for using them in an NJ-series configuration are described.
CS/CJ Series Analog I/O Units Operation Manual	W345	CS1W-AD041-V1/081-V1/161 CS1W-DA041/08V/08C CS1W-MAD44 CJ1W-AD041-V1/081-V1/042 CJ1W-DA021/041/08V/08C/042V CJ1W-MAD42	Learning about the functions and usage of CJseries Analog Input Units, Analog Output Units, and Analog I/O Units.	The functions and usage of the CJ- series Analog Input Units, Analog Output Units, and Analog I/O Units for using them in a CJ-series configuration are described.

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