

Model

CJ1W-DCM11-E

DC-Motor Control Unit

INSTRUCTION SHEET

Thank you for purchasing an OMRON product. Read this instruction sheet thoroughly and familiarise yourself with the functions and characteristics of the product before using it. To ensure safe and correct use of this Unit, also read the following Operation Manual (Cat. No. W393-E1): SYSMAC CJ1 Series Programmable Controllers.

Keep this instruction sheet for future reference.

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⚠ DANGER Do not attempt to take the Unit apart and do not touch any internal parts while the power is being supplied. Doing either of these may result in electrical shock, and serious or fatal injury.

⚠ Caution Leave the protective label on top of the Unit as long as the Unit is not mounted and wired completely, in order to prevent wire clippings or other materials from getting inside the Unit. When the mounting and wiring has been completed, the label must be removed to allow air circulation and heat radiation.

0425-6701A

■ Nomenclature

Unit status indicators

- RUN (Green)
- MOT (Green)
- ERH (Red)
- ERC (Red)
- IN0, IN1, IN2, IN3 (Green)

Machine number rotary switches

Digital inputs(from top to bottom)

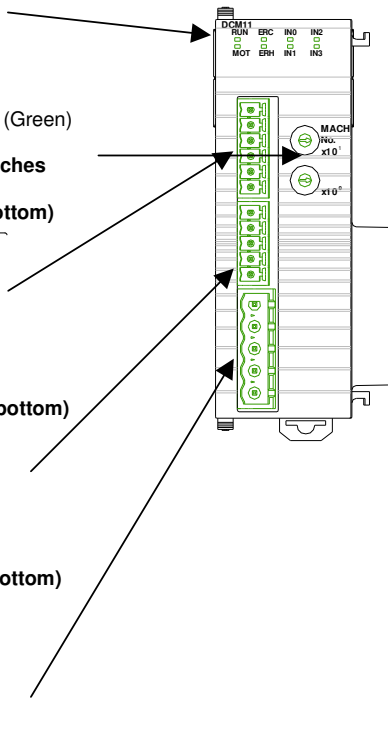
- IN0
- IN1
- IN2
- IN3
- Common D
- Shield

Counter inputs(from top to bottom)

- A
- B
- Z
- Common C
- Shield

PWM outputs(from top to bottom)

- Shield
- 24V in
- 0V in
- PWM A out
- PWM B out



■ Quick Start

To make the module ready for use:

1. Set Machine Number.
2. Mount and wire the Unit.
3. Turn power on.
4. Create I/O Table.

To start the motor:

5. Set ramp up time
6. Set PWM duty cycle
7. Set motor bit ON
8. The MOT led should now turn on

To stop the motor with brake(direct stop):

1. Enable IN0 and/or IN2
2. Make IN0 or IN2 high

Alternative way to stop the motor with brake:

1. Make motor bit "0"

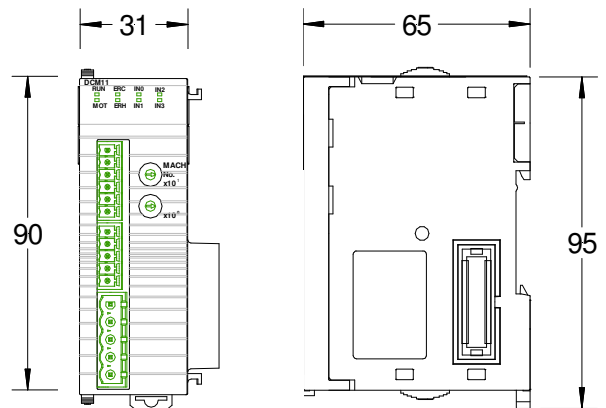
To stop the motor with ramp(gradual stop):

1. Enable IN1 and/or IN3 high
2. Make IN1 and/or IN3 high

■ Unit specifications

Unit type	CJ1 Special I/O Unit
Applicable PLC models	CJ1-series PLCs
Storage temperature	-20 to +75 °C
Ambient temperature	0 to +55 °C
Ambient humidity	10 to 90 % (non-condensing)
EMC compliance	EN 50081-2, EN 61131-2
Current consumption	PLC side: 200 mA (5V via busconnection) Motor side:30mA (no motor load)
Weight	Single unit: 106 g (typical)
Number of words allocated	7 CIO-words. First word allocated = CIO 2,000 + (N x 10) (Where N = Machine Number)

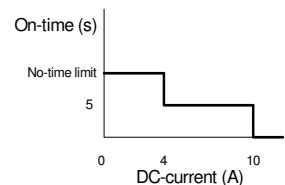
■ Dimensions



■ Machine number switch

Name	Function
MACHINE No.	Sets the Machine Number (00 – 99).
$x10^1$	<ul style="list-style-type: none"> • Make sure each Machine Number is used only once per CJ1-CPU. • Be sure to turn off the power to the Unit before setting the Machine Number.
$x10^0$	

- Digital input: 24V / 6mA / 4 points
- Counter input: 24V / 8mA / 1 channel
- Output: PWM 24V / 4A



■ LED Indicators

Indicator	Colour	Status	Condition
RUN	Green	Off	Unit is deactivated
		On	Unit is activated
ERC	Red	Off	No over-current, Bridge-IC OK
		On	System panic, Error log read error, Error log write error, invalid PWM duty cycle value, over-current, PWM direction change error
		Blinking	Bridge IC error
ERH	Red	Off	No power or no PLC, CPU related error active
		On	Initialisation with the PLC failed
MOT	Green	Off	Motor drive 'OFF'
		On	Motor drive 'ON'
		Blinking	Over temperature or 24V power failure
IN0	Yellow	Off	Digital input 'OFF'
		On	Digital input 'ON'
IN1	Yellow	Off	Digital input 'OFF'
		On	Digital input 'ON'
IN2	Yellow	Off	Digital input 'OFF'
		On	Digital input 'ON'
IN3	Yellow	Off	Digital input 'OFF'
		On	Digital input 'ON'

■ Operating the Unit via CIO

n = CIO 2000 + (N x 10), with N the Machine Number of the Unit.

Word	Bit	Function
n	00	Motor ON/OFF. Note: A <i>transition</i> from 0 to 1 will trigger the motor ON. Vice versa for motor OFF.
	01	Reset counter
	02-03	Set PWM frequency. 00 = 20kHz(default) 01=10kHz 10=2kHz 11=1kHz
	04-07	Reserved
	08	Function digital input 0 0=normal digital input (default) 1=Forward stop(with brake)
	09	Function digital input 1 0=normal digital input (default) 1=Forward stop(with ramp)
	10	Function digital input 2 0=normal digital input (default) 1=Reverse stop(with brake)
	11	Function digital input 3 0=normal digital input (default) 1=Reverse stop(with ramp)
	12-14	Reserved
	15	Function digital counter input 0 = count AZ (32 bits, default) 1 = count ABZ (32 bits 2's complement)
n+1	00-15	PWM with direction: -100,0%...0%...100,0% Note: Negative value's are to be entered in 2's complement representation. In hex, the PWM range would be: FC18...0000...03E8
n+2	00-07	PWM ramp down(default 00) PWM signal with ramp down time from 0 to 25,6 seconds. Only active from a higher to a lower, or a more negative to a less negative value.
	08-15	PWM ramp up(default 00) PWM signal with ramp up time from 0 to 25,6 seconds. Only active from a lower to a higher, or a less negative to a more negative value.

Word	Bit	Function
n+3	00	Digital input 0 0 = input is low 1=input is high
	01	Digital input 1 0 = input is low 1=input is high
	02	Digital input 2 0 = input is low 1=input is high
	03	Digital input 3 0 = input is low 1=input is high
	04	Motor controlled 0= not controlled 1= controlled
	05	Motor running 0 = motor stopped 1 = motor running
	06	PWM on the A or B output 0 = A outputs the PWM signal 1 = B outputs the PWM signal Note: when there is no PWM output, the value of bit 06 corresponds with the last valid PWM output. Default, it is 0.
	07	Reserved
	08	DC motor voltage 0 = no DC-motor voltage 1 = DC motor voltage OK
	09	Motor brake 0 = motor brake off 1 = motor brake on
	10	Direction change error 0 = error not active 1 = error active
	11	Illegal PWM value error 0 = error not active 1 = error active
	12	Reserved
	13	Reserved
	14	Working temperature error 0 = error not active 1 = error active (temperature too high)
15	Unit driver error 0 = error not active 1 = error active (temperature too high)	
n+4	00-07	Input current dc-motor unit Current value from 0 to 10A (100mA/bit)
	08-14	Reserved
	15	Current overload 0 : I < 10A 1 : I > 10A
n+5	00-15	32 bits counter input, lower 16 bits counter part
n+6	00-15	32 bits counter input, upper 16 bits counter part

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