

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Features

### Medium-scale Module Type

- Koyo Electronics' best series that packages higher performance and is worth more than the price
- Four kinds of CPU are available.
- Module addition: up to 8-slot
- Maximum I/O points: 2,048 points
- Program memory: 31.5 K/  
Data memory: 15.3 K
- Communication port: 4 port
- PID control: Up to 16 built-in loops



### Features

The D4 series packages performance that is worth more than the price and size. Among Koyo Electronics' PLCs, the D4 series makes the widest range of input-output modules and input/output configurations available.

#### Equipment

The D4 series has four kinds of CPU from that which has a memory capacity of 3.5 K and 640 input/output points to that which has the memory capacity of 31.5 K and 2,048 input/output points.

Moreover, the PLC models come in an AC type and the DC type according to power source specifications.

The D4 series has flexible input/output and communication modules as shown below.

- DC/AC input, output module (DC: Up to 64 points)
- 10 A relay output
- 12-bit and 16-bit analog input/output
- Thermocouple / Resistance thermometer bulb input
- Serial and Ethernet module data communications
- High speed counter input and pulse output
- Serial remote I/O master / slave module
- Ethernet remote I/O master / slave base unit controller

#### Feasible Systems

- Creation of a control system that has up 3,500 points of local / decentralized input-output
- Execution of cost-effective process control using built-in PID instructions and dedicated modules

#### The D4-454 is a Solution with the Best Balance of Functions and Price.

The D4-454 is equipped with memory and input/output that sufficiently meet user needs. The D4-454 has a program capacity of 31.5 K as built-in memory. Moreover, the D4-454 supports 2,048 input/output points that can be mounted to the CPU and expansion bases. If remote I/O is used, 1,536 points can be added. Moreover, the D4-454 supports IEEE floating-point arithmetic instructions and functions via four communication ports with the use of three connectors equipped for communications. Also, the D4-454 can communicate with operation display panels, Windows computer applications, up to 7 remote I/O points, and other PLCs over a network.

The D4 series supports more than 200 kinds of instructions that can execute drum sequence, ASCII output, floating-point arithmetic, trigonometrical function, bit operation in words (word bits), interruption routines triggered by time / hardware, For/Next loop, direct input/output, and PID. The D4 series also supports real-time clocks, calendars and history error logs.

#### PID Supported

Most commercially available PLCs are inconvenient because they are not equipped with ramp / soak, alarm, and loop schedule setting functions, and ladder programs must be separately created by PID loop. Meanwhile, the D4-454 CPU is easy to operate because it has the following functions.

- 16 PID loops that are configurable in tabular format
- Automatic setting of loop schedules
- Alarm and ramp / soak indicator chart
- Programming software that has a built-in loop adjustment window for performing trend analysis
- CPU's automatic setting of near-optimal loop by automatic tuning

#### Industry's Top-class Input/Output Products are Available.

Generally, the input-output module accounts for a large share of the costs required for a PLC system, but Koyo Electronics has great news for users. Namely, the more input-output modules are equipped, the more the cost can be reduced.

#### Inexpensive Analog Module

Koyo Electronics' F4-08AD analog input module is equipped with 8 channels for analog input and offers seven ranges (4 to 20 mA, 0 to 20 mA, 0 to 5 V, 0 to 10 V, 1 to 5 V,  $\pm 5$  V and  $\pm 10$  V) at low cost.

Regarding the high-density analog module, select Koyo Electronics' F4-16AD-1 module. This module is equipped with 16 channels for current input and is available at an extremely low price.

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- SJ-ETHER/SJ
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- DL205
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- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

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- Specifications
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- Analog Module
- Base Unit
- Accessories/Connector

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


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## Model Number List

Name	Outline						
Self-powered CPU Module	CPU Module *MC=Memory Cartridge						
	Model Number	Power Source Type	Functions			Weight (g)	Price
	D4-454	AC	Memory 31.5 K (Built-in)/ Maximum input/output 1,024 points Data Register 15.3 K			730	Open
D4-454-C	DC	Memory 31.5 K (Built-in)/ Maximum input/output 1,024 points Data Register 15.3 K			750	Open	
Memory Cartridge	Memory						
	Model Number		Functions			Weight (g)	Price
	D4-EE-2		EEPROM 32 K electricity erasure type			38	Open
G-53M		CMOS RAM 7.5K with high capacity capacitor			42	Open	
Base Unit	Base Unit						
	Model Number	Number of Slots	Base Extension Functions			Weight (g)	Price
	D4-04B-1	4	Available			660	Open
	D4-06B-1	6	Available			830	Open
D4-08B-1	8	Available			990	Open	
Base Expansion	Base Expansion Power Supply Unit						
	Model Number	Power Source Type	Functions			Weight (g)	Price
	D4-EX	AC	Local base expansion unit. The base expansion cable (D4-EXCBL-1 or D4-EXCBL-2) is required.			660	Open
	D4-EXDC	DC	Local base expansion unit. The base expansion cable (D4-EXCBL-1 or D4-EXCBL-2) is required.			680	Open
	Base Expansion Cable						
	Model Number		Functions			Weight (g)	Price
D4-EXCBL-1		Cable length 1 m				Open	
D4-EXCBL-2		Cable length 0.5 m				Open	
Extension IO Module	Input/Output Module		Input		Output		
	Model Number	Points	Functions	Points	Functions	Weight (g)	Price
	D4-08ND3S	8	24 to 48 V DC Sink/source			250	Open
	D4-16ND2	16	12 to 24 V DC Source			250	Open
	D4-16ND2F	16	12 to 24 V DC Source			250	Open
	D4-32ND3-1	32	24 V DC Sink/source			190	Open
	D4-64ND2	64	20 to 28 V DC Source			220	Open
	D4-08NA	8	100 to 200 V AC			240	Open
	D4-16NA	16	100 V AC			270	Open
	D4-16NE3	16	12 to 24 V AC/12 to 24 V DC Sink/source			250	Open
	F4-08NE3S	8	90 to 150 V AC/DC Sink/source			256	Open
	F4-08TD1S			8	24 to 150 V DC Sink	282	Open
	D4-16TD1			16	5 to 24 V DC Sink	270	Open
	D4-16TD2			16	12 to 24 V DC Source	280	Open
	D4-32TD1			32	5 to 24 V DC Sink	190	Open
	D4-32TD2			32	12 to 24 V DC Source	190	Open
	D4-64TD1			64	5 to 24 V DC Sink	210	Open
	D4-08TA			8	18 to 220 V AC	330	Open
	D4-16TA			16	18 to 220 V AC	350	Open
	D4-08TR			8	Relay 2 A	260	Open
	F4-08TRS-1			8	Relay 10 A	374	Open
F4-08TRS-2			8	Relay 5 A	380	Open	
D4-16TR			16	Relay 1 A	310	Open	

The specifications and prices described in this catalog were valid when the catalog was issued. For the latest information, contact our sales persons or see our website.

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# D4 Series

## Specifications







Name	Outline						
Extension I/O Module	Analog Input/output Module						
	Model Number	Points	Input Functions	Points	Output Functions	Weight (g)	Price
	F4-04AD	4	0 to 5 V/-5 V to +5 V/ 1 to 5 V/0 to 10 V/ -10 V to +10 V/ 4 to 20 mA/0 to 20 mA			290	Open
	F4-04ADS	4	0 to 5 V/0 to 10 V/ 1 to 5 V/-5 V to +5 V/ -10 V to +10 V/ 0 to 20 mA/4 to 20 mA			323	Open
	F4-08AD	8	4 to 20 mA/1 to 5 V/ 0 to 20 mA/0 to 5 V/ 0 to 10 V/-5 V to +5 V/ -10 V to +10 V			290	Open
	F4-16AD-1	16	4 to 20 mA			329	Open
	F4-16AD-2	16	0 to 5 V/0 to 10 V			326	Open
	F4-04DA-1			4	4 to 20 mA	268	Open
	F4-04DA-2			4	0 to 5 V/0 to 10 V/ -5 V to +5 V/-10 V to +10 V	271	Open
	F4-08DA-1			8	4 to 20 mA	317	Open
	F4-08DA-2			8	0 to 5 V/0 to 10 V	370	Open
	F4-16DA-1			16	4 to 20 mA	328	Open
	F4-16DA-2			16	0 to 5 V/0 to 10 V	276	Open
	F4-04DAS-1			4	4 to 20 mA Source	278	Open
	F4-04DAS-2			4	0 to 5 V/0 to 10 V	299	Open
	F4-08THM	8	Thermocouple/Voltage			229	Open
	F4-08RTD	8	Resistance thermometer bulb			270	Open
	Special Module						
	Model Number	Functions				Weight (g)	Price
	D4-RM	Serial remote I/O master				240	Open
	D4-RS	Remote I/O slave. Built-in 100/200 V power supply				760	Open
	D4-RSDC	Remote I/O slave. Built-in 24 V DC power supply				760	Open
	H4-ERM100	Ethernet remote master 10/100 BASE-T/TX				179	Open
	H4-ECOM100	Ethernet communication 10/100 BASE-T/TX				179	Open
	D4-DCM	Serial communication (2 ports)				265	Open
	F4-16PID	PID coprocessor module				208	Open
	F4-4LTC	4-loop temperature controller				360	Open
	H4-CTRIO	High speed counter input/output				252	Open

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# D4 Series

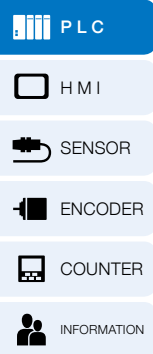
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Name	Outline			
Associated Equipment	Accessories/Maintenance Product			
	Model Number	Functions	Weight (g)	Price
	D4-FILL	Dummy slot		Open
	Peripheral Device			
	Model Number	Functions	Weight (g)	Price
	PC-DSOFT5	Programmer software for computer	657	Open
	FA-ISOCON	RS232 → RS422/RS485 converter	670	Open
	U-30JP	3 m external 24 V DC power source connection cable for D4-64ND2, D4-64TD1		Open
	U-30JH	3 m one-end loose wire cable for D4-64ND2, D4-64TD1		Open
	Cable / Connector for program			
	Model Number	Functions	Weight (g)	Price
	S-15CNJ	Conversion connector cable between PLC port (modular) and S-15JP/S-30JG-T (D-sub1 5-pin)		Open
	S-9CNS1	Conversion connector between DOS/V and Z-20JP		Open
	S-15CNP1	Conversion connector between Z-20JP and D4 series programmer port (D-sub 15-pin)		Open
	S-25CNP1	Conversion connector between Z-20JP and D4 series general-purpose port (D-sub 25-pin), between Z-20JP and host link (D-sub 25-pin)		Open
	S-15JP	Programmer connection cable 1.5 m between D4-HPP-1 and D4 series general-purpose port (D-sub 15-pin)		Open
	S-30JP	Programmer connection cable 3 m between D4-HPP-1 and D4 series general-purpose port (D-sub 15-pin)		Open
	Z-20JP	Programmer connection cable 2 m, modular jack on both ends		Open
	S-30JD-T	Connection cable 3 m between DOS/V and host link (D-sub 25-pin), DOS/V and D4 series general-purpose port (D-sub 25 pin)	280	Open
	S-30JG-T	Connection cable 3 m between DOS/V and D4 series programmer port (D-sub 15-pin)	370	Open
Maintenance Product				
Model Number	Functions	Weight (g)	Price	
D3-D4-BAT	CPU memory backup battery	213	Open	



# D4 Series

## Specifications

### D4 series CPU specifications

System Capacity	D4-454/D4-454DC-1
Ladder Memory Capacity (Word)	
Built-in Memory	31.5 K Flash
V Memory Capacity (Word)	15.3 K
Battery Backup	<input type="radio"/>
Total CPU Memory Input/Output Points (The Actual Input/Output Points Differ According to the Input/Output Configuration Selected.)	8,192 (I+Q+GI+GQ)
Input/Output Module Point Density	2/4/8/16/32/64
Number of Input/Output Module Slots per Base Unit	4/6/8
Number of Input/Output Points that can be Mounted for the CPU and Expansion Base. Serial Remote I/O (Including CPU and Expansion Input/Output)	Input 1,024 points/ Output 1,024 points Up to 4,224
Remote I/O Channel	3
Input/Output Points per Remote Channel	512, 2,048 (Port 3)
Ethernet Remote I/O	<input type="radio"/>
Discrete Input/Output Points	Up to 8,192 (including CPU and expansion input/output)
Analog Input/Output Channel	Allocate to the V memory
Remote I/O Channel	Restriction by power supply
Input/Output Points per Remote Channel	16,384 (When using I, Q, M, GI, GQ and data registers any area.)
Performance	
Contact Point Execution (Boolean Operation)	0.96 $\mu$ s
Standard Scan Time (During 1K Boolean Operation)	4 to 5 ms
Programming and Diagnosis Function	
Ladder Type	<input type="radio"/>
Stage Type	<input type="radio"/> /1,024
Rewrite During RUN	<input type="radio"/>
Variable / Fixed Scan	Fixed or variable
Number of Instructions	255
Internal Relay	2,048
Timer	256
Counter	256
Direct Input/Output	<input type="radio"/>
Subroutines	<input type="radio"/>
For/Next Loop	<input type="radio"/>
Timed Interrupt	<input type="radio"/>
Integer Math	<input type="radio"/>
Floating-point Math	<input type="radio"/>
Trigonometric Functions	<input type="radio"/>
Table Instructions	<input type="radio"/>
PID Control	<input type="radio"/> , 16-loops
Drum Sequencer	<input type="radio"/>
Bit of Word	<input type="radio"/>
Real-time Clock / Calendar	<input type="radio"/>
Internal Diagnosis Function	<input type="radio"/>
Password	Multi-level
System/User Error Log	<input type="radio"/>
Communication Function: Port1	
Built-in Ports	4 ports
K-sequence (Programmer-dedicated)	<input type="radio"/>
DirectNet (CCM2)	<input type="radio"/>
MODBUS RTU Master / Slave	<input type="radio"/>
ASCII Output (PRINT)	<input type="radio"/>
Maximum Communication Speed (bps)	38.4 k
Weight (g)	730, 750

# D4 Series

## Dimensions

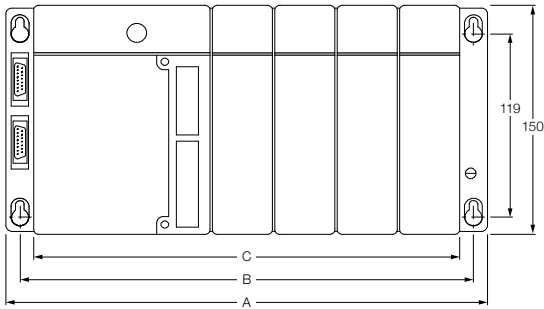
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### Dimensions (Unit: mm)

Base Unit	A	B	C
D4-04B-1	293	275	258
D4-06B-1	367	349	332
D4-08B-1	441	423	406



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# D4 Series

## CPU Specifications

### CPU Module

D4-454

D4-454DC-1



The photo shows the D4-454.  
(The shape is the same.)

### General Specifications

Items	Specifications	
Model Number	D4-454	D4-454DC-1
Input Voltage Range	85 to 132 V AC (100 V range), 170 to 264 V AC (200 V range)	20 to 28 V DC (24 V DC range, ripple is below 10%.)
Maximum Inrush Current	20 A	20 A
Maximum Electric Power Consumption	50 VA	38 W
Insulation Resistance	> 10 MΩ (500 V DC applied)	
Storage Ambient Temperature	-20°C to 70°C	
Use Ambient Temperature	0°C to 60°C	
Ambient Humidity	Relative humidity 5% to 95% (No condensation)	
Withstand Voltage	1 min (1,500 V AC is applied between primary, secondary, field grounds, and RUN relay.)	
Vibration Resistance	Compliant with MIL STD 810C, Method 514.2, JIS C0040, and sine wave oscillation test method	
Impact Resistance	Compliant with JIS C0041 Compliant with MIL STD 810C, Method 516.2	
Noise Resistance	NEMA (ICS3-304)	
Surrounding Atmosphere in Place of Use	No corrosive gases	

### Outline

The D4-454 are equipped not only with all performances other CPU models have, but also with other functions. Although equipped with numerous functions as a CPU, the D4-454 is available at low price.

### 16 PID Loops

The D4-454 can directly process up to 16 PID loops in the CPU. The control mode can be selected from diverse control modes including automatic, manual, and cascade control. Moreover, various types of alarms such as process variation, rate of change, and deviation are available. Since loop operation parameters are stored in the V memory, they can be easily accessed from programmable displays, etc. The setup of the loop can be performed using Koyo Electronics' DirectSOFT programming software. Loop specifications and various functions are summarized in the following page.

### Floating-point Arithmetic

The D4-454 support floating-point arithmetic of IEEE format. Namely, the D4-454 are equipped with all trigonometrical functions and various formats for integer / floating-point number conversion.

### Power Source

The power source of the D4 series is mounted on the CPU. The D4 series comes in AC type and DC type (-C) models.

### Performance Specifications

Items	Specifications
Built-in Memory	31.5 K Flash
Data Register Capacity (Word)	15.3 K
Battery Backup	Yes
Maximum Input/Output Points	8,192 (I+Q+GI+GQ)
Input/Output Points that can be Mounted	Input 1,024 points/Output 1,024 points (CPU and expansion base) Up to 4,224 (Serial remote I/O)
Remote I/O Channel	3
Input/Output Points per Remote Channel	512, 2,048 (Port 3)
Ethernet Remote I/O	Yes
Analog Input/Output Channel	Allocate to the data register.
Remote I/O Channel	Restriction by power supply
Input/Output Points per Remote channel	16,384 (When using I, Q, M, GI, GQ and data registers any area.)
Contact Point Execution (Boolean Operation)	0.96 μs
Standard Scan Time (During 1K Boolean Operation)	4 to 5 ms
Language System	Simultaneous use of relay symbol type and stage type
Rewrite During RUN	Yes
Variable / Fixed Scan	Fixed or variable
Number of Instructions	255
Internal Relay	2,048
Timer	256
Counter	256
Direct Input/Output	Yes
Subroutines	Yes
For/Next Loop	Yes
Timed Interrupt	Yes
Integer Math	Yes
Floating-point Math	Yes
Trigonometric Functions	Yes
Table Instructions	Yes
PID Control	Yes
Drum Sequencer	Yes
Bit of Word	Yes
Real-time Clock / Calendar	Yes
Internal Diagnosis Function	Yes
Password	Multi-level
System/User Error Log	Yes
Communication Function: Port0 (Programmer Port)	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 9,600 bps (Fixed) Connection: D-sub 15-pin (Female) Protocol:K sequence (S)
Communication Function: Port 2	Transmission method: RS-232C compatible (Non-isolated) Transmission Speed: 300, 600, 1,200,2,400, 4,800, 9,600, 19,200, 38,400 Connection: 6-pin modular Protocol: DirectNET (S), Non-procedure (S), K sequence (S)
Communication Function: Port 1, 3 * There is the 6-pin terminal block that is connected to the port 3 inside the PLC.	Transmission method: RS-232C, RS-422 and RS-485 compatible (Non-isolated) Transmission Speed: 300, 600, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400bps Connection: D-sub 25-pin (Female) Protocol: DirectNET (M/S), MODBUS (S), Non-procedure (M/S), K sequence (S)

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## Memory Cartridge

D4-EE-2 G-53M



### Memory Cartridge

Items	D4-EE-2	G-53M	
Memory Type	EEPROM	CMOS RAM	
Program Memory Capacity (Word)	32 K	7.5 K	
Battery	No	No (Backup by high capacity capacitor)	
Writing Cycle Life	>10,000	Not applicable	
Write Inhibit	Internal jumper	Internal jumper	
Memory Erasure Method	Electricity	Electricity	
Compatibility with Each CPU	D4-430	x	x
	D4-440	○ (Only 15.5 K)	○
	D4-450	○ (Only 15.5 K)	○
	D4-454	○	○
Weight (g)	38	42	

\* Battery model No. for replacement: D4-MC-BAT

### Outline

The memory that stores the program of the old model CPU. However, this is not required for the D4-430.

Since the D4-440 does not have a built-in memory, a memory cartridge is required.

The D4-450/D4-454 can increase its memory capacity using a memory cartridge in place of the built-in memory.



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# D4 Series

## Special Module

### Serial Remote I/O Module

#### D4-RM

Master module



#### D4-RS/D4-RSDC

Slave module



### Remote Master Specifications

Items	Specifications
Module Type	Intelligent
Number of Masters per CPU	Up to 2 units
Number of Slaves that can be Supported	7 slaves per channel
Communication with Slave	By shielded twisted pair cable RS-485 (38.4 kbps)
Recommended Cable	Belden 9841 or equivalent
Transmission Distance	Up to 1 km
Terminal Block Type	Anchored
Weight	240 g

### Remote Slave Specifications

Items	Specifications
Maximum Slave Points per CPU	512 (D4-430), 1,024 (D4-440/450/D4-454)
Occupied I/O Point	The input/output module mounted on the slave base unit does not automatically occupy the standard input/output points. The module occupies the remote I/O points at a rate that is equal to the I/O points of each base unit and it can optionally use the standard I/O addresses.
Terminal Block Type	Anchored
External Power Supply	100 V AC /200 V AC (D4-RS) 24 V DC (D4-RSDC)
Weight	D4-RS: 760 g D4-RSDC: 760 g

### Outline

A large-scale remote I/O is available for the D4 series. The purpose of the remote I/O is to reduce the cost of wiring by arranging the I/O near the device subject to control. The capacity of each CPU is shown in the right table. The same functions as the D4-RM are incorporated into the 25-pin port equipped to the CPU of D4-450/D4-454 and the terminal block of D4-454, but the D4-RM explained here serves the same functions. The mechanism is as follows. The dedicated module called the "remote master" should be mounted on the CPU base unit. This master module can control up to seven remote slaves. Each slave module is connected to the master module in a daisy chain using twisted pair communication cables (maximum length is 1 km). Each remote slave is mounted on the D4 series base unit (any size). The standard D4 series module is mounted on the remote base.

Normal I/O addresses or dedicated remote I/O addresses can be assigned to the remote I/O points. The remote master sends the remote I/O information to the CPU. Communications between the remote master and the CPU are performed asynchronously with CPU scanning.

Items	D4-454	D4-450	D4-440	D4-430
Maximum Remote Master Number that can be Supported	3*	3*	2	2
Maximum I/O Points that can be Supported	1,536	1,536	1,024	512
Maximum I/O Points that can be Supported per Channel	512	512	512	512
Maximum Remote I/O Base Unit Number per Channel	7	7	7	7

\* Up to 2 units for D4-RM, 1 channel is via 25-pin CPU port.

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- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module**
- Input/Output Module
- Analog Module
- Base Unit
- Accessories/Connector

## Ethernet Remote I/O Master Module

### H4-ERM100



The photo shows the H4-ECOM100.  
(The shape is the same.)

### Specifications

Items	Specifications
Communication	10/100 Base-T/TX
Data Transfer Rate	10/100 Mbps
Link Distance	100 m
Ethernet Port	RJ45
Ethernet Protocols	TCP/IP, IPX
Weight	179 g

### Outline

The Ethernet remote master H4-ERM100 connects the CPU system of the D4-430, D4-440 and D4-450/D4-454 to the slave input/output via a high speed Ethernet link.

### Needs for Increasing Input/Output

Up to 16 EBC systems can be added to one ERM module. The EBC systems can be also used in combination.

Note: In the case of applications that require large capacity T1H-EBC100 analog input/output or H4-EBC100 16-channel analog input/output, the buffer capacity of a single H4-ERM100 module can be exceeded. In such a case, the H4-ERM100 should be added to the system.

### Easy Connection

The ERM is connected to the user's control network through a category 5 UTP cable (cable length is up to 100 m). If you want to extend the connection length or increase the number of nodes, you can use a repeater. The PLC, ERM and EBC slave modules are linked together to update the remote I/O point. The scan cycles of these three models are simultaneously generated but are asynchronously performed. Therefore, it is recommended to contain the important input/output points that need to be monitored for each scan, in the CPU base unit.

### Network Connections Between ERM and Other Ethernet Devices

It is strongly recommended that the ERM module and the slave be arranged on a dedicated Ethernet remote I/O network. The Ethernet network can process an extremely enormous amount of data transactions. Generally, the processing is performed at very high speed. However, when Ethernet traffic is heavy, processing may have adverse effect on the reliability of the slave input/output and the speed of the input/output network. Therefore, the ERM network and several ERM networks should be separated from the ECOM / business network.

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Special Module

### Communication Module

H4-ECOM100



#### Specifications

Items	Specifications
Communication	10/100 Base-T Ethernet
Data Transfer Rate	10/100 Mbps
Link Distance	100 m
Ethernet Port	RJ45
Ethernet Protocols	TCP/IP, UDP/IP, IPX and Modbus TCP
Weight	179 g

#### Easy Connection

Category 5 UTP cables (up to 100 m) are used.

If the distance is extended or the number of nodes is increased, a hub should be used.

#### Features

- High speed peer-to-peer network connection among PLCs
- High speed updates using the DirectSOFT programming software
- High-performance access functions from the human machine interface (HMI) and Windows-compatible software
- SDK for customizing drivers (Free of charge)
- Virtually unlimited number of network nodes
- Easy setting by DIP switch and NetEdit software

#### Outline







The Ethernet communication module enables high speed peer-to-peer network connections among PLCs at a revolutionarily low cost. It is not necessary to designate a specific PLC as the network master. You can freely start communications from any PLC. Moreover, the Ethernet communication module can link the PLC and computers using industry-standard cables, hubs, and repeaters. If Visual Scope is used, the Ethernet communication module can link to simple Windows spreadsheet programs and PLCs connected to the network. Also, the module can link to human machine interface (HMI) software and a direct logic PLC. Furthermore, using the DirectSOFT programming software, you can monitor and update ladder programs that operate in any direct logic PLC on the network.

- Common Subject Matter
- SJ-ETHER/SJ
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- Features
- Specifications
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- Special Module**
- Input/Output Module
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series

## Special Module

- PLC 
- HMI 
- SENSOR 
- ENCODER 
- COUNTER 
- INFORMATION 

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module**
- Input/Output Module
- Analog Module
- Base Unit
- Accessories/Connector

### Serial Data Communication Module

D4-DCM



#### Specifications

Items	Specifications
Module Type	Intelligent
Number of Modules per CPU	Up to 7 units, any slot of the CPU base unit
Communication	RS-232C/422, DirectNet (CCM2) or MODBUS (only slave) RTU protocol. The communication speed can be selected in the range of 300 bps to 38.4 Kbps. Odd parity or no parity. HEX or ASCII mode.
Recommended Cable	Belden 9729 or equivalent (In the case of RS-422)
Wiring Connector	D-sub 25-pin connector
Weight	265 g

#### Outline

The D4 series data communication module is a general-purpose communication interface for the D4 series family. This module can be used mainly for four applications.

- Expansion of the general-purpose communication ports to be connected to computers and programmable displays
- Network interface to the DirectNet (CCM2) network
- Network interface connected to the MODBUS network using the RTU protocol
- Interface with non-procedural serial transmitters and receivers

#### Expansion of Communication Ports

All models of the D4 series CPU are equipped with at least two communication ports. However, if you want to expand the communication ports, you can separately mount the data communication module. Since the DM is the expansion communication port, it has the same specifications as Port 1 of the D4 series. Therefore, if the device can be connected to Port 1 of the D4 series CPU, it can be connected to the DM. Check if the device is equipped with a driver compatible with the D4 series. Thus, you can connect programmable displays and computers to the DM. Moreover, since the DM requires no programming, it can start data transfer if the DM communication parameters are set and the DM is connected to the device over cable.

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Special Module

### 16 Loop PID Coprocessor

F4-16PID



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

#### General Specifications

Items	Specifications
Module Type	Coprocessor, intelligent
Number of Loops	Up to 16 units
Number of Modules per CPU	Up to 6 units, Any slots in the CPU base unit
PID Algorithm	PID type in the position or velocity form. Optionally, direct or reverse operation, error square root, and error square control can be designated.
Sample Rate	Designate the time interval between PV samples in the range of 0.1 to 999.9 in units of second or minute.
Automatic/Manual	When the internal relay (M) starts, the relevant loop becomes the automatic mode. When the loop is in the manual mode, the PV alarm monitoring continues.
Square Root PV	In the case of flow control use, designate the square root of PV.
Limit SP	Regarding the allowable change in set points, designate the maximum value and minimum value.
Gain	Designate the proportional gain (0.00 to 99.99).
Reset	Designate the reset time (0.1 to 999.9) in units of minute, second, millisecond, or microsecond.
Bumpless Switching I	If the loop is changed from manual to automatic, the bias and the set point are automatically initialized. With this function, the data can be transferred without causing rapid change.
Bumpless Switching II	When the module switches from manual to automatic, the bias is set so as to become equal to the output. Thus, without entering the set point again, the module can be switched to and from the automatic mode.
Limit Output	Designate the maximum value and the minimum value of the output range as on option.
Step Bias	When the set point changes greatly, the proportion bias is adjusted. Thus, the loop can be stabilized at high speed to prevent the output from exceeding the range. Use the step bias with normal adjusted bias operation.
Wind-up Prevention	If the PID type in the position format is designated, the reset operation stops when the PID output reaches 0 or 100%. Select the adjusted bias operation or freeze the bias operation.
Rate	Designate the derivative time (0 to 999.9) in units of minute or second.
Rate Limiting	Designate the differential gain restricting coefficient that restricts PV to be used in the calculation of the derivative term. (99.99 to 00.01)
Error Dead Zone	Designate the increase and decrease values ("allowance") that are more than and less than the set point. The output is not changed in this section.
Error Square	If the error is squared, the effects that a small error have on the loop output can be minimized, but both "error square" and "error dead zone" control should be enabled.
20% Offset from PV	When inputting a 4 to 20 mA sender in the analog input module range (0 to 20 mA), designate a 20% offset from PV.
Weight	208 g

#### Alarm Specifications

Items	Specifications
Dead Zone	Designate the dead zone of alarms (0.1% to 5%) as to all alarms except the rate of change.
PV Alarm	Start the Q output or M depending on the conditions of 4 alarm points.
PV Deviation	Start the Q output or M depending on the conditions of 4 alarm points. Designate the alarm that indicates the PV deviation (top and bottom) from the set point value (yellow deviation) and the alarm that indicates a large PV deviation from the set point value (orange deviation).
Rate of Change	When the PV change is faster than the limit of the designated rate of change, start the Q output or M.
Transmitter Failure	Monitor the PV to check if the transmitter has failed.

#### Outline

The F4-16PID module is a PID coprocessor module designed to execute up to 16 PID loops independently from the D4 series CPU. The F4-16PID reads process variables using a high speed intelligent bus interface and directly writes the PID output in the V memory of the D4 series CPU. Also, software that enables the configuration of PID loops by simple menu manipulation is available. Since the ladder program required for the CPU is minimized, it can reduce the effects of PID calculation, which largely uses floating-point arithmetic performed by the coprocessor, on the CPU scan time. As a result, while the coprocessor is executing high speed PID, the CPU can execute high speed discrete control. This architecture enables the F4-16PID to deliver higher performance than miniature PLCs in which PID instructions are incorporated into the instruction words.

#### Operation

Process variables (PV) is generally received from analog input and input modules such as thermocouples. The input value is copied in the process variable position by the ladder program of the user.

The PID module calculates the loop output value and saves it in the V memory for output. The user can write this value in the analog output channel, use it as the time ratio for discrete output, or send it to a loop that is different from the set point or a cascade loop.

All loop information is read from and written in the V memory block designated by the user. Each loop that is set to ON requires 32 V memory positions. Since all loop parameters are stored in the V memory, any device that can read from and write in the V memory of the D4 series (instruction word programmers, programmable displays, etc.) can configure/adjust and monitor the loops.

# D4 Series

## Special Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module**
- Input/Output Module
- Analog Module
- Base Unit
- Accessories/Connector

### 4-loop Temperature Controller

#### F4-4LTC



A cover is available.

#### General Specifications

Items	Specifications
Module Type	Coprocessor, intelligent
Number of Loops	Up to 4 units
Number of Modules per CPU	Up to 8 units, any slots in the CPU base unit
Occupied I/O Point	No
Setting memory	24 dedicated memory blocks per loop
Input Type	Resistance thermometer bulb or thermocouple
Controller Output	Open collector, 5 to 26.4 V DC (0.15 A)
Converter Type	Charge Balancing, 24-bit
Notch Filter	> 100 dB (50 Hz and 60 Hz) (f-3 dB = 13.1 Hz)
Common Mode Rejection Ratio	Minimum 90 dB (DC), minimum 150 dB(50 Hz and 60 Hz)
Sample Rate	Selectable in units of module 800 ms (10 Hz filter) 160 ms (50 Hz filter)
Current Transformer	0.5 A to 50 A detection range
Minimum Output ON Time	300 ms to detection heater current
Loop Operating Modes	PID control ON/OFF control
PID Control Period	Designate the sample rate and the time for producing the output (0.5 to 99.9 s).
Limit SP	Designate the upper limit and the lower limit as the allowed change in the set point.
Scaling	Convert the temperature into the industrial unit automatically.
Gain	Designate the proportional gain (0.0 to 6553.5). If the automatic adjusting function is set, the gain is also automatically decided.
Reset	Designate the reset time (0 to 65535 s). If the automatic adjusting function is set, the reset time is also automatically decided.
Wind-up Prevention	When the PID output reaches 0 or 100%, the reset operation stops. When the process temperature starts responding, the bias is automatically adjusted.
Rate	Designate the derivative time (0 to 65535 s). If the automatic adjusting function is set, the rate is also automatically decided.
Weight	360 g

#### Alarm Specifications

Items	Specifications
Dead Zone	The temperature 'dead zone' of the alarm should be designated. If the temperature exceeds the alarm limit (dead zone), the alarm is activated as normal.
High Temperature	The temperature has exceeded the programmed upper limit.
Low Temperature	The temperature has exceeded the programmed lower limit.
Deviation	If the temperature is higher or lower than the set point by exceeding the deviation limit, Q output or M starts.
Transmitter Failure	If a resistance thermometer bulb or thermocouple is burned out, or the input is lost, this alarm is issued.

#### Thermocouple Specifications

Items	Specifications
Temperature Range	J type: -190°C to 760°C (-310°F to 1,400°F) E type: -210°C to 1,000°C (-346°F to 1,832°F) K type: -150°C to 1,372°C (-238°F to 2,502°F) R type: 65°C to 1,768°C (149°F to 3,214°F) S type: 65°C to 1,768°C (149°F to 3,214°F) T type: -230°C to 400°C (-382°F to 752°F) B type: 529°C to 1,820°C (-984°F to 3,308°F) N type: -70°C to 1,300°C (-94°F to 2,372°F) C type: 65°C to 2,320°C (149°F to 4,208°F)
Input Fault Protection	60 Vms or 50 V DC (Maximum)
Cold Junction Compensation	Automatic compensation
Input Impedance	20 MΩ DC
Resolution	±0.1°C (Relative accuracy)
Maximum Error	±3°C (Do not include thermocouple error.)

#### Resistance Thermometer Bulb Specifications

Items	Specifications
Temperature Range	Pt 100 Type: -200°C to 850°C (-328°F to 1,562°F) Pt 1000 Type: -200°C to 595°C (-328°F to 1,103°F) jPt 100 Type: -35°C to 450°C (-36°F to 842°F) 10 Ω Type: -200°C to 260°C (-328°F to 500°F) 25 Ω Type: -200°C to 260°C (-328°F to 500°F)
Input Fault Protection	50 V DC (Maximum)
Resistance Thermometer Bulb-excited Current	200 μA
Resolution	±0.1°C
Maximum Error	±1°C

#### Outline

The F4-4LTC contains the functions of four single loop temperature controllers in one module. Since this module is equipped with four kinds of configurable asynchronous PID loops and temperature input / control output, it can maintain accurate temperature control if the PLC is in the STOP mode. Moreover, this module can control the temperature up to ±3276.7°C and supports thermocouple input and resistance thermometer bulb input. Simply by changing the setting of the jumper, you can select the optimal input configuration for user applications. Both input configurations support the SSR output for controlling heaters and coolers.

#### Operation

The temperature is directly read by the F4-4LTC via a resistance thermometer bulb or thermocouple input. If the temperature does not reach the target value (set point), the control output automatically starts. Also, since the F4-4LTC has functions for automatically adjusting the control loop, it can be easily adapted to changes in temperature and process state. Moreover, since the F4-4LTC is the intelligent module for the D4 series, the ramp / soak set points can be easily changed by ladder programs. Since floating-point arithmetic is executed in the temperature controller, the CPU needs minimum set and ladder programs, and calculations have little effect on the CPU scan time. Moreover, the temperature controller is equipped with alarm and diagnostic functions for monitoring conditions including low-temperature alarms, high-temperature alarms, deviation alarms, heater burnouts, and transmitter failures.

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Special Module

### High Speed Counter Module

#### H4-CTRIO



A cover is available.

#### General Specifications

Items	Specifications
Module Type	Intelligent
Number of Modules per Base Unit	Only the restriction by consumption current
Occupied I/O Point	No. The input/output is directly allocated to the V memory of the PLC and can be accessed by computer control.
Terminal Type	Removable 20P terminal block
Isolation	2,500 V (Between input/output and logic), 1,000 V (Input channel to input channel, between all outputs)
Weight	252 g

#### Input Specifications

Items	Input Specifications
Input	8 points (Sink/source), up to 100 kHz
Minimum Pulse Width	5 μs
Input Voltage Range	9 to 30 V DC
Maximum Voltage	30 V DC
Input Voltage Protection	Zener diode (Fixed to 33 V DC)
Rated Input Current	8 mA (Standard), 12 mA (Maximum)
Minimum ON-state Voltage	9.0 V DC
Maximum OFF-state Voltage	2.0 V DC
Minimum ON-state Current	5 mA (9 V DC is required for guaranteeing the ON status.)
Maximum OFF-state Current	2.0 mA
OFF→ON Response Time	Below 3 μs
ON→OFF Response Time	Below 3 μs

#### Output Specifications

Items	Specifications
Output	4 points (Independent isolation specification), Current source/sink, FET output (Open drain, source, floating-gate drive)
Voltage Range	5 V DC to 36 V DC
Maximum Voltage	36 V DC
Output Clamp Voltage	60 V DC
Maximum Load Current	1.0 A
Maximum Load Voltage	36 V DC
Maximum Leakage Current	100 μA
Maximum Allowable Inrush Current	5 A (20 ms between)
OFF→ON Response Time	Below 3 μs
ON→OFF Response Time	Below 3 μs
ON-time Voltage Drop	Up to 0.3 V
External Power Supply	Required only by loop power supply. Not required when using the internal module function.*
Overcurrent Protection	Up to 15 A
Stop by Temperature	Contact point temperature = 150°C
Overheat Prevention Reset	Contact point temperature = 130°C
Duty Cycle Range	1% to 99% (In unit of 1%, default = 50%)
Configurable Preset Value	a) Assign one preset value to each output. b) Assign one preset value table to each output. Up to 128 preset values can be stored in one table. Maximum table set number = 255

\* When using the stepping motor, prepare an external power supply.

#### Input Resources

Items	Specifications
Counter/Timer	4 (2 per 4-input channel group)
Response Option	x 1, x 2 or x 4, encoder, up or down counter, edge timer, dual edge timer, input pulse catch, reset, prohibition
Timer Range/Resolution	4.2 billion (32-bit), 1μs
Counter Range	±2.1 billion (32 bits or 31 bits + sign bit)

#### Output Resources

Items	Specifications
Pulse Output/Discrete Output	Pulse outputs: 2 channel (2 outputs per channel, 20Hz to 20kHz), discrete outputs: 4 points
Resource Option	Pulse output: Pulse / Direction or CW/CCW, Profile: Trapezoid, serpentine curve, symmetric serpentine curve, dynamic position, dynamic speed, origin search, speed mode, RUN mode to the limit, RUN mode to the position Discrete output: 4 (Set, reset, pulse on, pulse off, toggle, and reset count functions are configurable. (Assign to the response to timer / counter input functions.)) Raw data mode: Direct access is possible from the user's application program to discrete output.
Target Position Range	±2.1 billion (32 bits or 31 bits + sign bit)

#### Outline

The high speed counter input/output (H4-CTRIO) module is designed to receive high speed pulsed input signals for count measurement or timing applications, and transmits high speed pulsed output signals that can be used for stepping motor control, monitoring, alarms, and other discrete control functions. The H4-CTRIO module can be flexibly used for applications that require accurate count measurement or timing based on input events or for applications for high speed control output.

Since the H4-CTRIO module has a built-in microprocessor, it can operate asynchronously with the PLC controller. Namely, the output generated from this module responds to the input signal in real-time. Therefore, the PLC controller can scan input/output without delay time.

The H4-CTRIO module is designed for use with user devices that transmit pulse output such as a incremental encoder.

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O
- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module**
- Input/Output Module
- Analog Module
- Base Unit
- Accessories/Connector



# D4 Series

## Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
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- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

### Input Module 《DC 8 Points》

D4-08ND3S



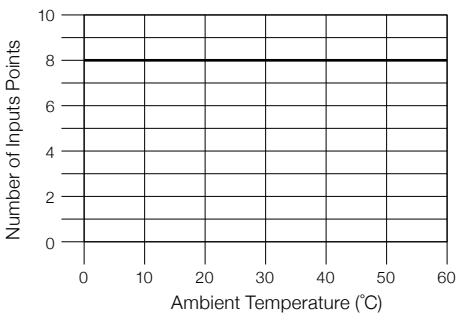
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

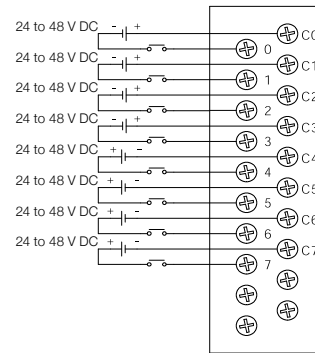
#### Input Specifications

Items	Specifications
Number of Inputs per Module	8 (Sink/source)
Common	1 points 1 common x 8 (Inter-common independence)
Rated Input Voltage	24 to 48 V DC
Input Voltage Range	20 to 52 V DC
Maximum Input Voltage	52.8 V DC
ON Voltage Level	> 18 V
OFF Voltage Level	< 7 V
Input Impedance	4.8 kΩ
Input Current	5 mA (24 V DC), 10 mA (DC 48 V)
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	3 to 10 ms
ON→OFF Response Time	3 to 12 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Weight	250 g

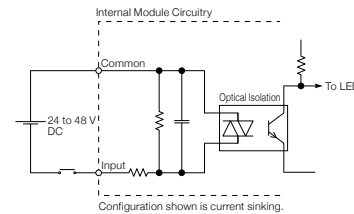
#### Derating Chart



#### Wiring Diagram



#### Equivalent Circuit





- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Input Module 《DC16 Points》

D4-16ND2



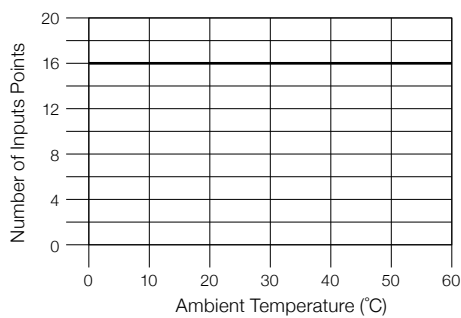
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

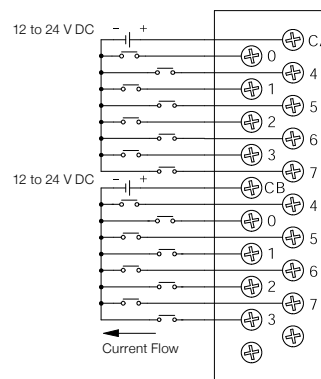
#### Input Specifications

Items	Specifications
Number of Inputs per Module	16 (Current source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	12 to 24 V DC
Input Voltage Range	10.2 to 26.4 V DC
Maximum Input Voltage	26.4 V DC
ON Voltage Level	> 9.5 V
OFF Voltage Level	< 4.0 V
Input Impedance	3.2 kΩ (12 V DC), 2.9 kΩ (24 V DC)
Input Current	3.8 mA (12 V DC), 8.3 mA (24 V DC)
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	1 to 7 ms (Standard: 2.3 ms)
ON→OFF Response Time	2 to 12 ms (Standard: 4.6 ms)
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Weight	250 g

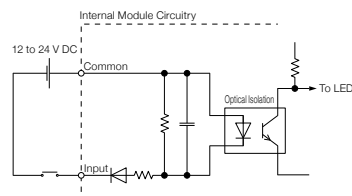
#### Derating Chart



#### Wiring Diagram



#### Equivalent Circuit



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

## Input Module 《DC 16 Points》

D4-16ND2F



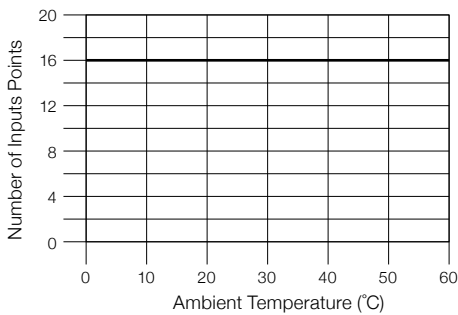
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

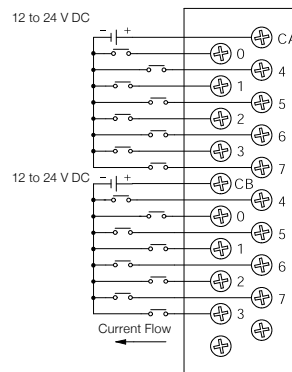
### Input Specifications

Items	Specifications
Number of Inputs per Module	16 (Current source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	12 to 24 V DC
Input Voltage Range	10.2 to 26.4 V DC
Maximum Input Voltage	26.4 V DC
ON Voltage Level	> 9.5 V
OFF Voltage Level	< 4.0 V
Input Impedance	3.2 kΩ (12 V DC), 2.9 kΩ (24 V DC)
Input Current	3.8 mA (12 V DC), 8.3 mA (24 V DC)
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Weight	250 g

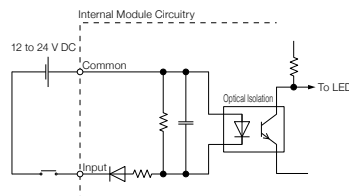
### Derating Chart



### Wiring Diagram



### Equivalent Circuit



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Input Module 《DC 32 Points》

D4-32ND3-1



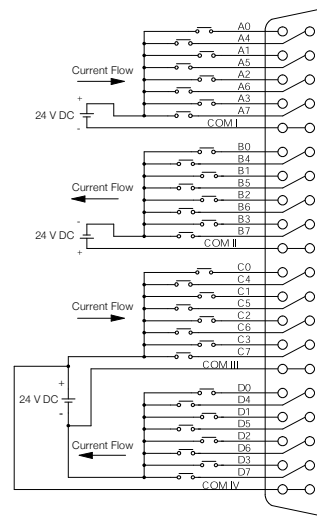
The photo shows the Japanese model.  
(The shape is the same.)

#### Input Specifications

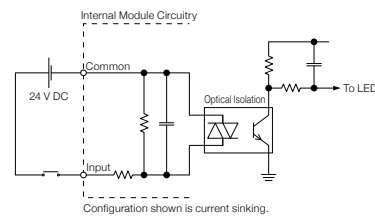
Items	Specifications
Number of Inputs per Module	32 (Sink/source)
Common	8 points 1 common x 4 (Inter-common independence)
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Maximum Input Voltage	30 V DC
ON Voltage Level	> 19 V
OFF Voltage Level	< 10 V
Input Impedance	4.8 kΩ
Input Current	5 mA
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.6 mA
OFF→ON Response Time	2 to 10 ms
ON→OFF Response Time	2 to 10 ms
Terminal Type	40-pin connector. A connector is sold separately.
Status Display	Logic side
Weight	190 g

The state that is displayed on the front of the module can only be displayed for up to 16 points at a time. If the switch is in the A or B position, the state of the first input point group (16 in total for A0 to A7 and B0 to B7) is displayed. If the switch is in the C or D position, the state of the second input point group (16 in total for C0 to C7 and D0 to D7) is displayed.

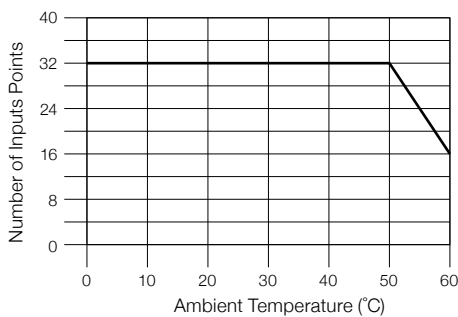
#### Wiring Diagram



#### Equivalent Circuit



#### Derating Chart



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

## Input Module 《DC64 Points》

D4-64ND2



The photo shows the Japanese model.  
(The shape is the same.)

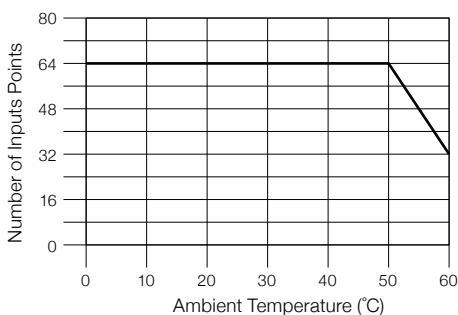
### Input Specifications

Items	Specifications
Module Mounting Position	Dedicated to the CPU base unit*
Number of Inputs per Module	64 (Current source)
Common	8 points 1 common x 4 (Inter-common independence)
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Maximum Input Voltage	30 V DC
ON Voltage Level	> 20.0 V
OFF Voltage Level	< 13.0 V
Input Impedance	4.8 kΩ
Input Current	5.0 mA (24 V DC)
Minimum ON-state Current	3.6 mA
Maximum OFF-state Current	2.6 mA
External Power Source Conditions (Option)	24 V DC ± 10%, up to 320 mA
OFF → ON Response Time	2.5 ms (Standard)
ON → OFF Response Time	5 ms (Standard)
Terminal Type	40-pin connector x 2. A connector is sold separately.
Status Display	Logic side
Weight	220 g

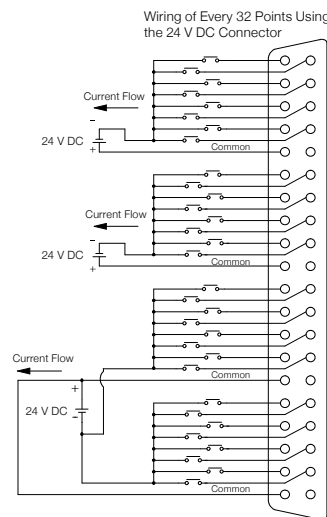
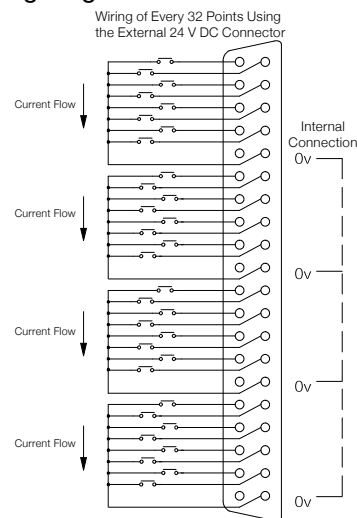
Since only 32 LEDs are equipped in the module, the state of input points can only be displayed for 32 points at a time. If the switch is in the A or B position, the state of the first input point group (32 in total for A0 to A17 and B0 to B17) is displayed (connector 1). If the switch is in the C or D position, the state of the second input point group (32 in total for C0 to C17 and D0 to D17) is displayed (connector 2).

- \*1. When the 64-point module is used, a dedicated module or communication module cannot be inserted into slots 5, 6, and 7 of the CPU base unit.
2. In the case of the D4-430 and D4-440, the expansion base unit cannot be mounted to the 64-point module.
3. In the case of the D4-450/D4-454, if a D4-□□B-1 is used for both the CPU base and the expansion base, the 64-point module can be also mounted on the expansion base.

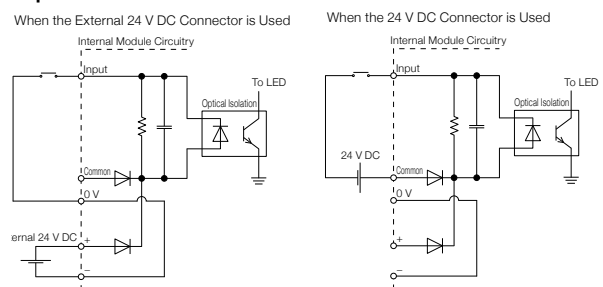
### Derating Chart



### Wiring Diagram



### Equivalent Circuit



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Input Module 《AC 8 Points》

D4-08NA



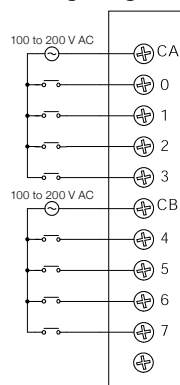
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

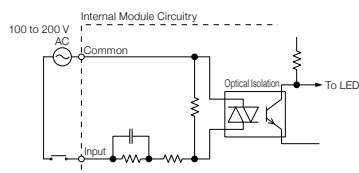
#### Input Specifications

Items	Specifications
Number of Inputs per Module	8
Common	4 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	100 to 200 V AC
Input Voltage Range	80 to 265 V AC
Maximum Input Voltage	265 V AC
AC Frequency	47 to 63 Hz
ON Voltage Level	> 70 V
OFF Voltage Level	< 30 V
Input Impedance	12 kΩ
Input Current	8.5 mA (100 V AC), 20 mA (AC 230 V)
Minimum ON-state Current	5 mA
Maximum OFF-state Current	2 mA
OFF→ON Response Time	5 to 30 ms
ON→OFF Response Time	10 to 50 ms
Terminal Type	Removable 11P terminal block
Status Display	265 V AC Logic side
Weight	240 g

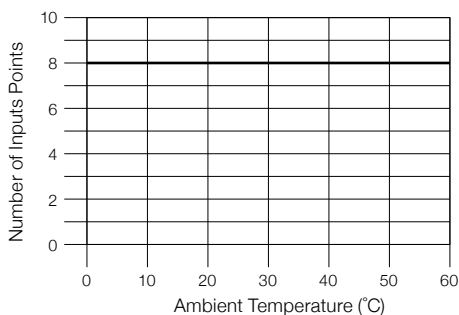
#### Wiring Diagram



#### Equivalent Circuit



#### Derating Chart



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series

## Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

### Input Module 《AC 16 Points》

D4-16NA



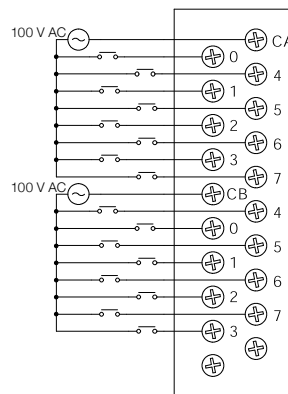
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

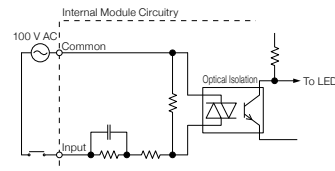
#### Input Specifications

Items	Specifications
Number of Inputs per Module	16
Common	8 points 1 common x 2(Inter-common independence)
Rated Input Voltage	100 V AC
Input Voltage Range	80 to 132 V AC
Maximum Input Voltage	132 V AC
AC Frequency	47 to 63 Hz
ON Voltage Level	> 70 V
OFF Voltage Level	< 20 V
Input Impedance	8 kΩ
Input Current	14.5 mA (120 V AC)
Minimum ON-state Current	7 mA
Maximum OFF-state Current	2 mA
OFF→ON Response Time	5 to 30 ms
ON→OFF Response Time	10 to 50 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Weight	270 g

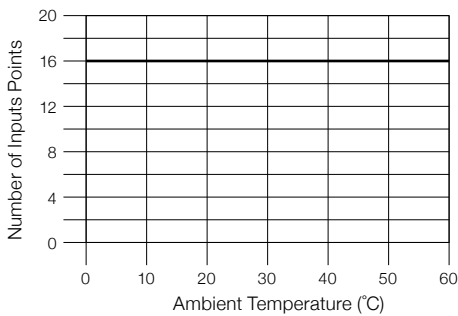
#### Wiring Diagram



#### Equivalent Circuit



#### Derating Chart



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Input Module 《AC/DC 16 Points》

D4-16NE3



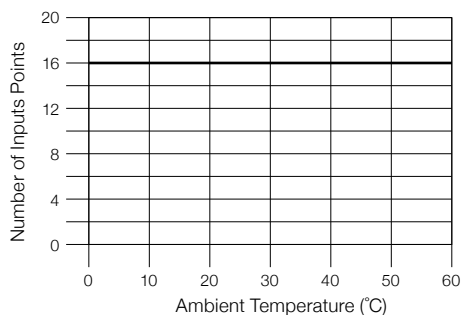
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

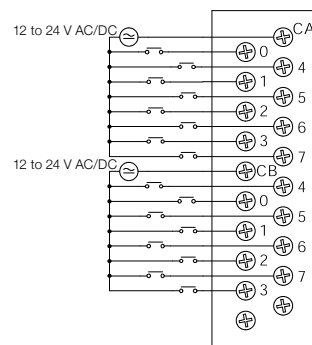
#### Input Specifications

Items	Specifications
Number of Inputs per Module	16 (Sink/source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	12 to 24 V AC/DC
Input Voltage Range	10.2 to 26.4 V AC/DC
Maximum Input Voltage	37.5 V AC/DC
AC Frequency	47 to 63 Hz
ON Voltage Level	> 9.5 V
OFF Voltage Level	< 3.0 V
Input Impedance	3.2 kΩ (12 V), 2.9 kΩ (24 V)
Input Current	3.8 mA (12 V), 8.3 mA (24 V)
Minimum ON-state Current	4 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	5 to 40 ms
ON→OFF Response Time	10 to 50 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Weight	250 g

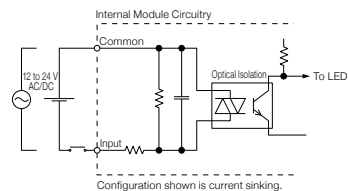
#### Derating Chart



#### Wiring Diagram



#### Equivalent Circuit



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series

## Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

### Input Module 《AC/DC 8 Points》

F4-08NE3S

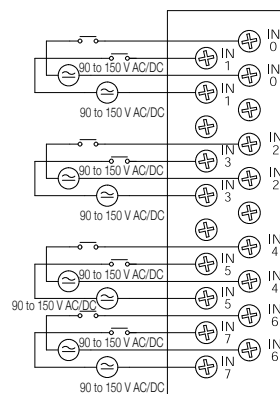


A cover is available.

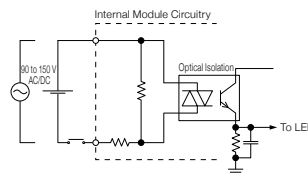
#### Input Specifications

Items	Specifications
Number of Inputs per Module	8 (Sink/source)
Common	1 points 1 common x 8 (Inter-common independence)
Input Voltage Range	90 to 150 V AC/DC
Maximum Input Voltage	350 peak < 1 ms
AC Frequency	47 to 63 Hz
ON Voltage Level	> 90 V DC, 75 V AC
OFF Voltage Level	< 60 V DC, 45 V AC
Input Impedance	22 kΩ
Input Current	5.5 mA (120 V)
Minimum ON-state Current	4 mA
Maximum OFF-state Current	2 mA
OFF→ON Response Time	8 ms
ON→OFF Response Time	15 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Weight	256 g

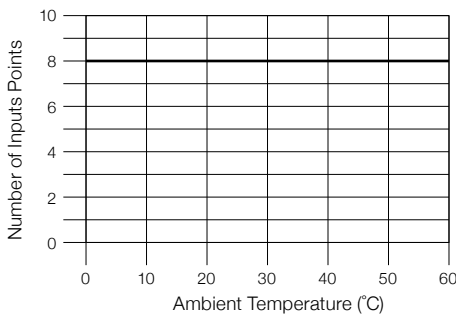
#### Wiring Diagram



#### Equivalent Circuit



#### Derating Chart





- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《DC 8 Points》

F4-08TD1S



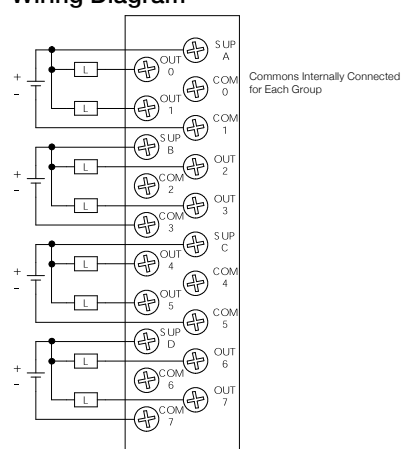
A cover is available.

The photo shows the D4-16TR.  
(The shape is the same.)

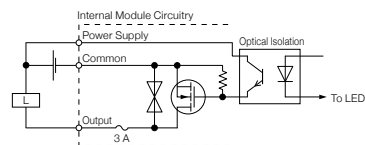
### Output Specifications

Items	Specifications
Number of Outputs per Module	8 (Current sinking)
Common	2 points 2 commons x 4 (Inter-common independence)
Operating Voltage	24 to 150 V DC
Output Type	MOS FET
Maximum Output Voltage	200 V DC < 1 ms
ON-time Voltage Drop	0.5 V DC (2 A)
Maximum Current	2 A/point, 4 A/common
Maximum Leakage Current	5 μA
Maximum Allowable Inrush Current	30 A (in 1 ms), 19 A (in 10 ms)
Minimum Load Current	Not applicable
OFF→ON Response Time	25 μs
ON→OFF Response Time	25 μs
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse	1 unit (3 A) / output (See the figure), unexchangeable
Weight	282 g

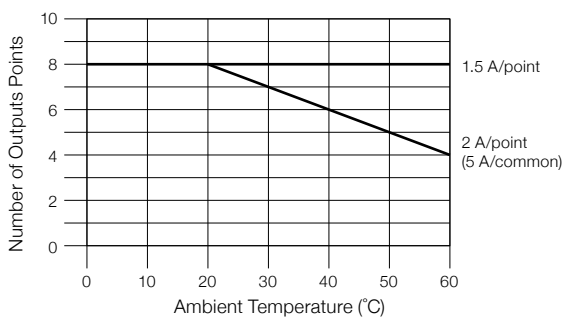
### Wiring Diagram



### Equivalent Circuit



### Derating Chart



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

## Output Module 《DC 16 Points》

D4-16TD1



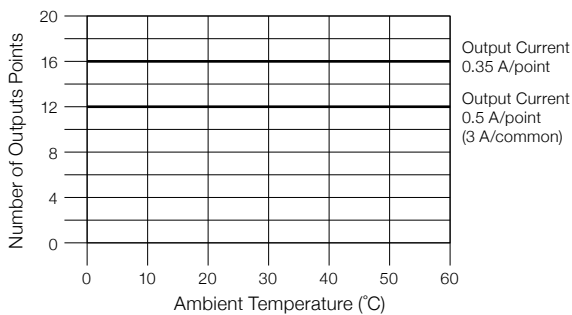
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

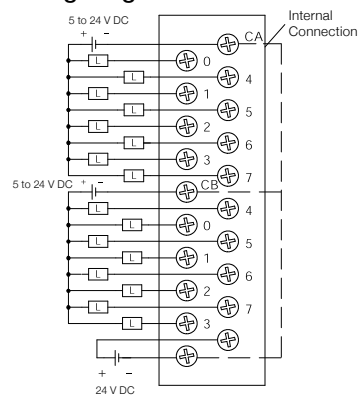
### Output Specifications

Items	Specifications
Number of Outputs per Module	16 (Current sinking)
Common	8 points 1 common x 2 (Internally connected between commons)
Rated Output Voltage	5 to 24 V DC
Operating Voltage	4.5 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Maximum Output Voltage	40 V DC
ON-time Voltage Drop	0.5 V DC (0.5 A), DC 0.2 V (0.1 A)
Maximum Current	0.5 A/point, 3 A/common
Maximum Leakage Current	0.1 mA (40 V DC)
Maximum Allowable Inrush Current	2 A (in 10 ms), 1 A (in 100 ms)
Minimum Load Current	0.2 mA
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse	1 unit (5 A)/common, unexchangeable
Weight	270 g

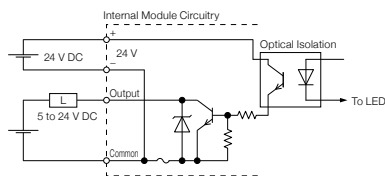
### Derating Chart



### Wiring Diagram



### Equivalent Circuit



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《DC 16 Points》

D4-16TD2



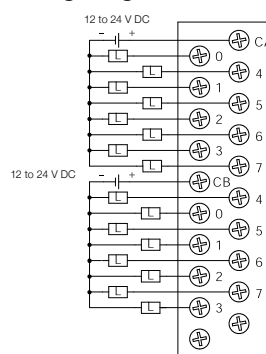
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

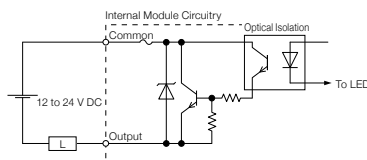
### Output Specifications

Items	Specifications
Number of Outputs per Module	16 (Current source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Operating Voltage	10.2 to 26.4 V DC
Output Type	NPN transistor (Emitter follower)
Maximum Output Voltage	40 V DC
ON-time Voltage Drop	1.5 V DC (0.5 A)
Maximum Current	0.5 A/point, 3 A/common (50°C) 2.5 A/common (60°C)
Maximum Leakage Current	0.1 mA (40 V DC)
Maximum Allowable Inrush Current	2 A (in 10 ms), 1 A (in 100 ms)
Minimum Load Current	0.2 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse	1 unit (5 A)/common, unexchangeable
Weight	280 g

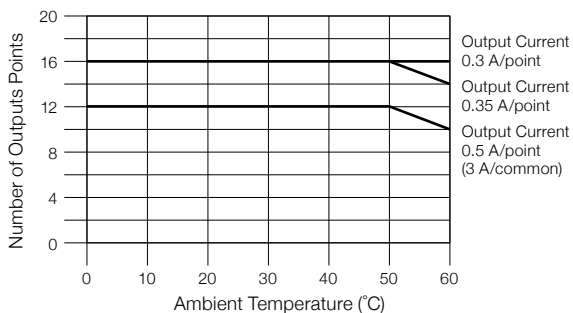
### Wiring Diagram



### Equivalent Circuit



### Derating Chart



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

## Output Module 《DC 32 Points》

D4-32TD1



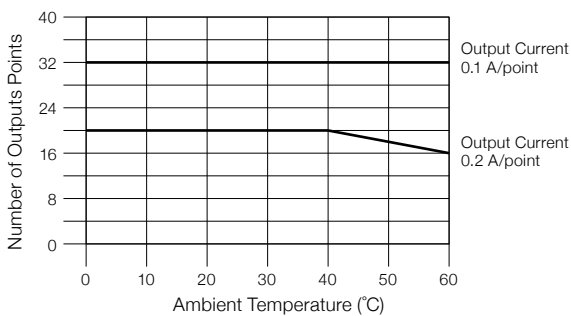
The photo shows the Japanese model.  
(The shape is the same.)

### Output Specifications

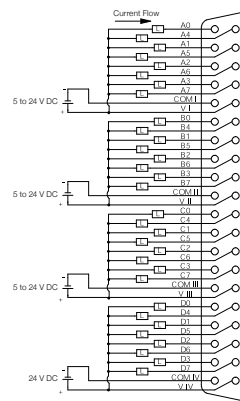
Items	Specifications
Number of Outputs per Module	32 (Current sinking)
Common	8 points 1 common x 4 (Inter-common independence)
Rated Output Voltage	5 to 24 V DC
Operating Voltage	4.75 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Maximum Output Voltage	36 V DC
ON-time Voltage Drop	0.6 V DC (0.2 A)
Maximum Current	0.2 A/point, 1.6 A/common
Maximum Leakage Current	0.1 mA (36 V DC)
Maximum Allowable Inrush Current	1 A (in 10 ms), 0.5 A (in 100 ms)
Minimum Load Current	0.1 mA
OFF→ON Response Time	0.1 ms
ON→OFF Response Time	0.1 ms
Terminal Type	40-pin connector. A connector is sold separately.
Status Display	Logic side
Fuse	No
Weight	190 g

The state that is displayed on the front of the module can only be displayed for up to 16 points at a time. If the switch is in the A or B position, the state of the first input point group (16 in total for A0 to A7 and B0 to B7) is displayed. If the switch is in the C or D position, the state of the second input point group (16 in total for C0 to C7 and D0 to D7) is displayed.

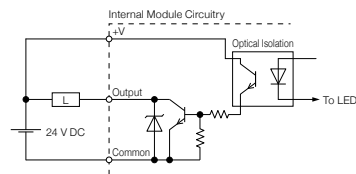
### Derating Chart



### Wiring Diagram



### Equivalent Circuit



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《DC 32 points》

D4-32TD2



The photo shows the Japanese model.  
(The shape is the same.)

Common Subject Matter

SJ-ETHER/SJ

DL05/06

DL205

D4

D3

Programmer

KPP

DirectSOFT

Terminator I/O

Features

Specifications

Dimensions

CPU Specifications

Special Module

Input/Output Module

Analog Module

Base Unit

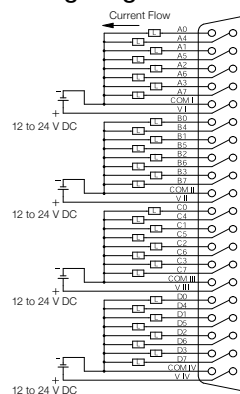
Accessories/ Connector

### Output Specifications

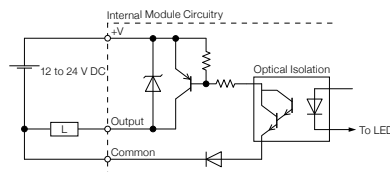
Items	Specifications
Number of Outputs per Module	32 (Current source)
Common	8 points 1 common x 4 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Operating Voltage	10.8 to 26.4 V DC
Output Type	PNP transistor (Open collector)
Maximum Output Voltage	30 V DC
ON-time Voltage Drop	0.6 V DC (0.2 A)
Maximum Current	0.2 A/point, 1.0 A/common, 4.0 A/module
Maximum Leakage Current	0.01 mA (26.4 V DC)
Maximum Allowable Inrush Current	500 mA (in 10 ms)
Minimum Load Current	0.2 mA
External Power Supply	10.8 to 26.4 V DC, 1 A/common (Including the load)
OFF→ON Response Time	0.2 ms
ON→OFF Response Time	0.2 ms
Terminal Type	40-pin connector. A connector is sold separately.
Status Display	Logic side
Fuse	No
Weight	190 g

The state that is displayed on the front of the module can only be displayed for up to 16 points at a time. If the switch is in the A or B position, the state of the first input point group (16 in total for A0 to A7 and B0 to B7) is displayed. If the switch is in the C or D position, the state of the second input point group (16 in total for C0 to C7 and D0 to D7) is displayed.

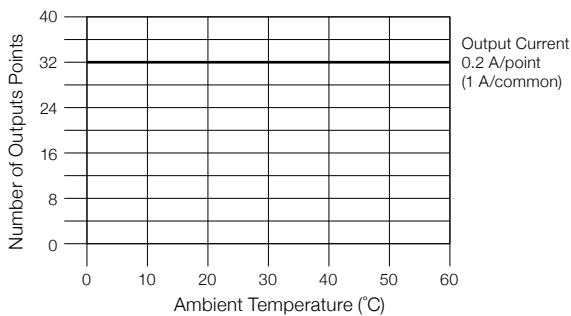
### Wiring Diagram









### Equivalent Circuit



### Derating Chart



# D4 Series

- PLC 
- HMI 
- SENSOR 
- ENCODER 
- COUNTER 
- INFORMATION 

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

The specifications and prices described in this catalog were valid when the catalog was issued. For the latest information, contact our sales persons or see our website.

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《DC64》

D4-64TD1



The photo shows the Japanese model.  
(The shape is the same.)

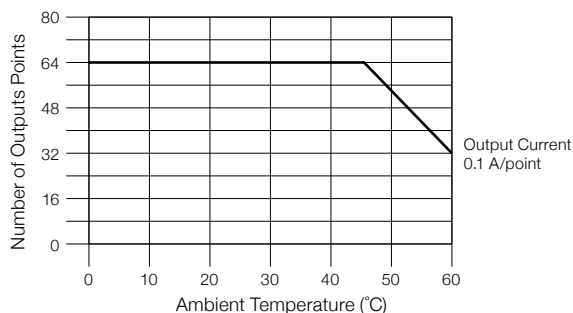
### Output Specifications

Items	Specifications
Module Mounting Position	Dedicated to the CPU base unit*
Number of Outputs per Module	64 (Current sinking)
Common	8 points 1 common x 8 (Internally connected between commons)
Rated Output Voltage	5 to 24 V DC
Output Voltage Range	4.75 to 26.5 V DC
Output Type	NPN transistor (Open collector)
Maximum Output Voltage	36 V DC
ON-time Voltage Drop	0.6 V DC (0.1 A)
Maximum Current	0.1 A/point, 1 A/common, 7 A/module total
Maximum Leakage Current	0.01 mA (36 V DC)
Maximum Allowable Inrush Current	1 A (in 1 ms) 700 mA (in 100 ms)
Minimum Load Current	0.1 mA
External Power Supply	24 V DC ±10% (850 mA/common), up to 7.0 A/total
OFF→ON Response Time	0.1 ms
ON→OFF Response Time	0.2 ms
Terminal Type	40-pin connector. A connector is sold separately.
Status Display	Logic side
ON-time Voltage Drop	1.5 V AC (2 A)
Fuse	No
Weight	210 g

The state that is displayed on the front of module can be only displayed for up to 32 points at a time. If the switch is in the A or B position, the state of the first input point group (32 in total for A0 to A17 and B0 to B17) is displayed. If the switch is in the C or D position, the state of the second input point group (32 in total for C0 to C17 and D0 to D17) is displayed.

- \*1. When the 64-point module is used, a dedicated module or communication module cannot be inserted into slots 5, 6, and 7 of the CPU base unit.
- 2. In the case of the D4-430 and D4-440, the expansion base unit cannot be mounted to the 64-point module.
- 3. In the case of the D4-450/D4-454, if a D4-□□B-1 is used for both the CPU base and the expansion base, the 64-point module can be also mounted on the expansion base.

### Derating Chart



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O
- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

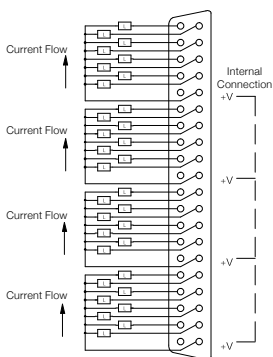
# D4 Series Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

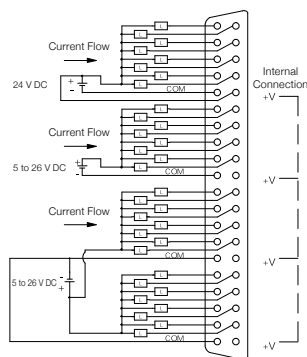
- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

## Wiring Diagram

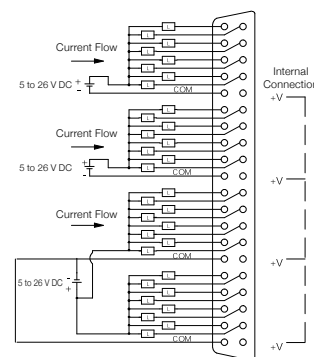
When the External 24 V DC Connector is Used



When the 24 V DC Connector is Used

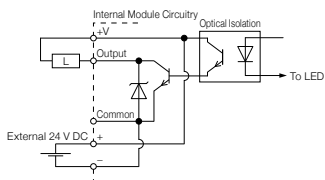


When the External 24 V DC Connector and a 5 to 26 V DC Load Power Source are Used

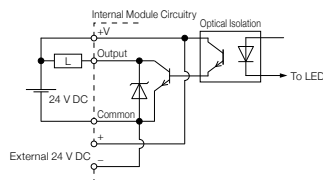


## Equivalent Circuit

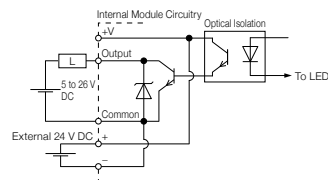
When the External 24 V DC Connector is Used



When the 24 V DC Connector is Used



When the External 24 V DC Connector and a 5 to 26 V DC Load Power Source are Used



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《AC 8 Points》

D4-08TA



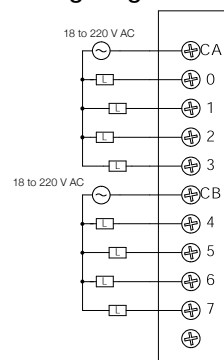
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

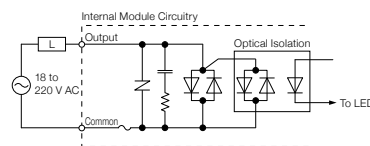
#### Output Specifications

Items	Specifications
Number of Outputs per Module	8
Common	4 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	18 to 220 V AC
Operating Voltage	15 to 265 V AC
Output Type	SSR (Triac)
Maximum Output Voltage	265 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	1.5 V AC (2 A)
Maximum Current	2 A/point, 5 A/common (30°C), 2 A/common (60°C)
Maximum Leakage Current	5 mA (265 V AC 60Hz)
Maximum Allowable Inrush Current	30 A (in 10 ms) 10 A (in 100 ms)
Minimum Load Current	10 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms + 1/2 cycle
Terminal Type	Removable 11P terminal block
Status Display	Logic side
Fuse	1 unit (8 A)/common, unexchangeable
Weight	330 g

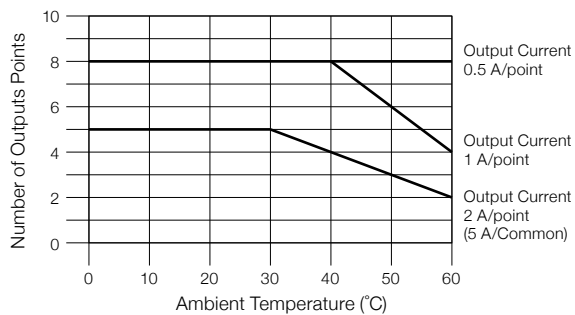
#### Wiring Diagram



#### Equivalent Circuit



#### Derating Chart



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series

## Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

### Output Module 《AC 16 Points》

D4-16TA



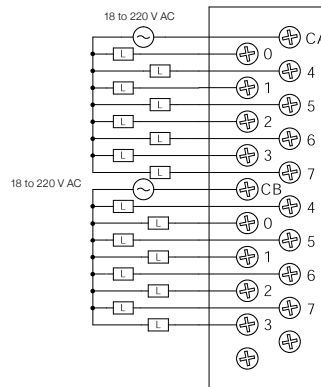
A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

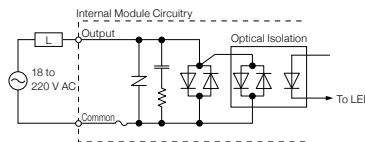
#### Output Specifications

Items	Specifications
Number of Outputs per Module	16
Common	8 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	18 to 220 V AC
Operating Voltage	15 to 265 V AC
Output Type	SSR (Triac)
Maximum Output Voltage	265 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	1.5 V AC (0.5 A 63Hz)
Maximum Current	0.5 A/point, 3 A/common (45°C), 2 A/common (60°C)
Maximum Leakage Current	4 mA (265 V AC)
Maximum Allowable Inrush Current	15 A (in 10 ms) 10 A (in 100 ms)
Minimum Load Current	10 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms + 1/2 cycle
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse	1 unit (5 A)/common, unexchangeable
Weight	350 g

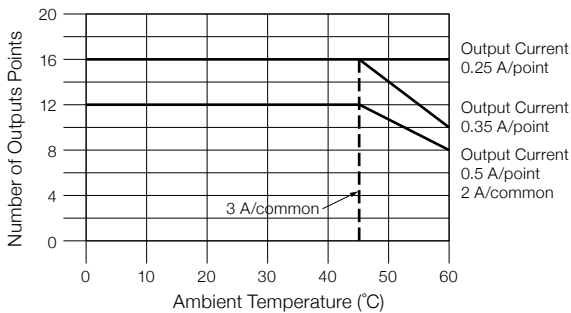
#### Wiring Diagram



#### Equivalent Circuit



#### Derating Chart



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《Relay 8 Points》

D4-08TR



A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

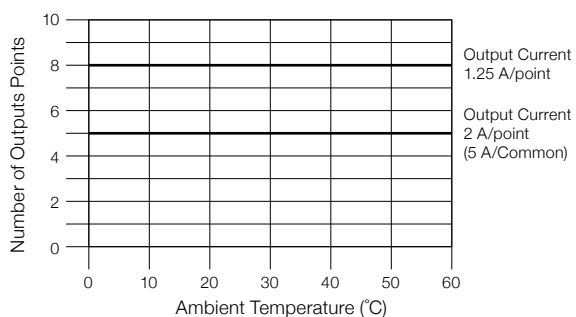
#### Output Specifications

Items	Specifications
Number of Outputs per Module	Relay 8 units
Common	4 points 1 common x 2 (Inter-common independence)
Operating Voltage	5 to 30 V DC/5 to 250 V AC
Output Type	a-contact (SPST-NO)
Maximum Output Voltage	30 V DC/256 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Not applicable
Maximum Current	2 A/point, 5 A/common
Maximum Leakage Current	0.1 mA (265 V AC)
Maximum Allowable Inrush Current	2 A
Minimum Load Current	5 mA
OFF→ON Response Time	12 ms
ON→OFF Response Time	12 ms
Terminal Type	Removable 11P terminal block
Status Display	Logic side
Fuse	1 unit (8 A)/common, unexchangeable
Weight	260 g

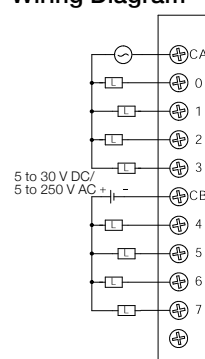
#### Standard Relay Life (Operation)

Maximum Resistance or Inductive Inrush Load Current	Operating Voltage		
	30 V DC	120 V AC	250 V AC
2 A Resistance	100 k	300 k	200 k
2 A Induction	100 k	80 k	60 k
0.5 A Resistance	800 k	1 M	800 k
0.5 A Induction	300 k	300 k	200 k

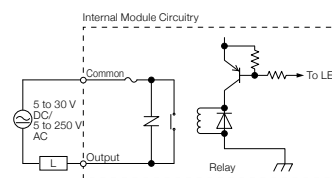
#### Derating Chart



#### Wiring Diagram



#### Equivalent Circuit



# D4 Series

## Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

### Output Module 《Relay 8 Points》

F4-08TRS-1



A cover is available.

The photo shows the F4-08TRS-2.  
(The shape is the same.)

#### Output Specifications

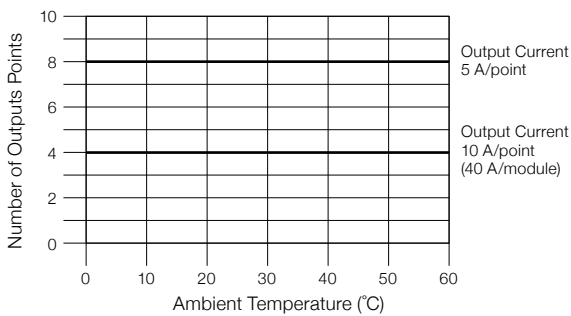
Items	Specifications
Number of Outputs per Module	Relay 8 units
Common	1 points 1 common x 8 (Inter-common independence)
Operating Voltage	12 to 30 V DC/12 to 250 V AC, * 125 to 250 V AC
Output Type	c-contact (SPST) x 4, a-contact (SPST-NO) x 4
Maximum Output Voltage	30 V DC/250 V AC (10 A)
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Not applicable
Maximum Current	10 A/point, 40 A/module
Maximum Leakage Current	Not applicable
Maximum Allowable Inrush Current	10 A
Minimum Load Current	100 mA (12 V DC)
OFF→ON Response Time	7 ms
ON→OFF Response Time	9 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse	1 unit (10 A)/common, unexchangeable
Weight	374 g

\* The standard maximum DC voltage rating is 120 V DC (0.5 A, 30,000 cycle). This module supports motor starters of sizes not larger than NEMA size 4.

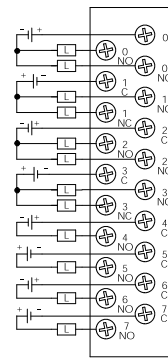
#### Standard Relay Life (Operation)

Maximum Resistance or Inductive Inrush Load Current	Operating Voltage		
	28 V DC	120 V AC	250 V AC
1/4 HP		25 k	
10.0 A	50 k	50 k	
5.0 A	200 k	100 k	
3.0 A	325 k	125 k	50 k
0.05 A	> 50 M		

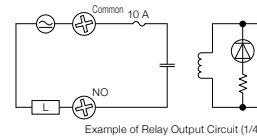
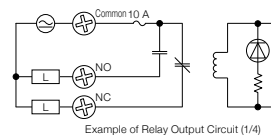
#### Derating Chart



#### Wiring Diagram



#### Equivalent Circuit



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Input/Output Module

### Output Module 《Relay 8 Points》

F4-08TRS-2



A cover is available.

### Output Specifications

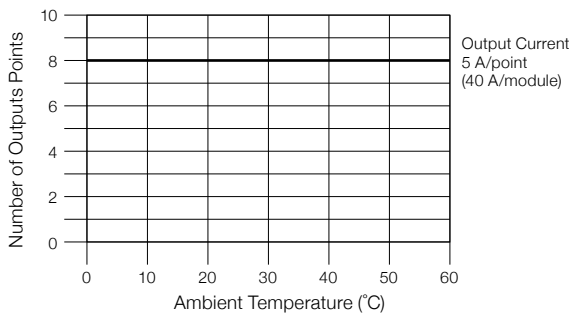
Items	Specifications
Number of Outputs per Module	Relay 8 units
Common	1 points 1 common x 8 (Inter-common independence)
Operating Voltage	12 to 30 V DC /12 to 250 V AC
Output Type	c-contact (SPDT) x 4, a-contact (SPST-NO) x 4
Maximum Output Voltage	30 V DC/250 V AC (5 A)
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Not applicable
Maximum Current	5 A/point, 40 A/module
Maximum Leakage Current	Not applicable
Maximum Allowable Inrush Current	10 A
Minimum Load Current	100 mA (12 V DC)
OFF→ON Response Time	7 ms
ON→OFF Response Time	9 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse 19379-K Wickman	1 unit (10 A 250 V)/common, replaceable
Weight	390 g

The standard maximum DC voltage rating is 120 V DC (0.5 A, 30,000 cycle). This module supports motor starters of sizes not larger than NEMA size 4.

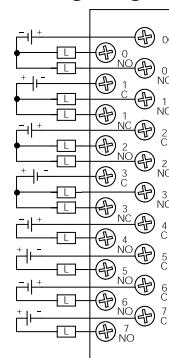
### Standard Relay Life (Operation)

Maximum Resistance or Inductive Inrush Load Current	Operating Voltage		
	28 V DC	120 V AC	250 V AC
5.0 A	200 k	100 k	
3.0 A	325 k	125 k	50 k
0.05 A	> 50 M		

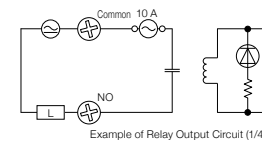
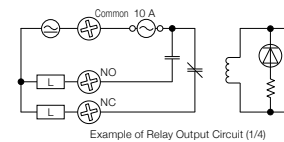
### Derating Chart



### Wiring Diagram



### Equivalent Circuit



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

# D4 Series

## Input/Output Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module**
- Analog Module
- Base Unit
- Accessories/Connector

### Output Module 《Relay 16 Points》

D4-16TR



A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

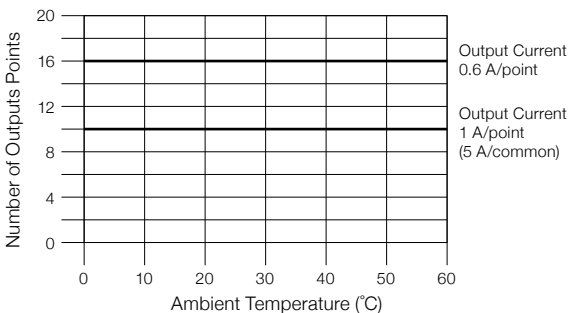
#### Output Specifications

Items	Specifications
Number of Outputs per Module	Relay 16 units
Common	8 points 1 common x 2 (Inter-common independence)
Operating Voltage	5 to 30 V DC/5 to 250 V AC
Output Type	a-contact (SPST-NO)
Maximum Output Voltage	30 V DC/250 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Not applicable
Maximum Current	1 A/point, 5 A/common
Maximum Leakage Current	0.1 mA (265 V AC)
Maximum Allowable Inrush Current	4 A
Minimum Load Current	5 mA
OFF→ON Response Time	10 ms
ON→OFF Response Time	10 ms
Terminal Type	Removable 20P terminal block
Status Display	Logic side
Fuse	1 unit (8 A)/common, unexchangeable
Weight	310 g

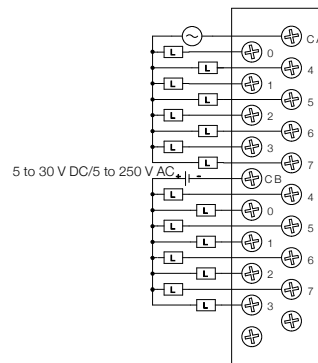
#### Standard Relay Life (Operation)

Maximum Resistance or Inductive Inrush Load Current	Operating Voltage		
	30 V DC	120 V AC	250 V AC
1 A Resistance	> 1 M	500 k	300 k
1 A Induction	400 k	200 k	100 k
0.5 A Resistance	> 2 M	800 k	500 k
0.5 A Induction	> 1 M	300 k	200 k

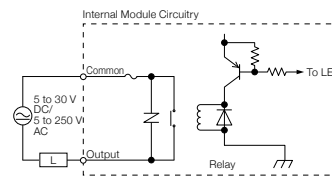
#### Derating Chart



#### Wiring Diagram



#### Equivalent Circuit



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Input Module 《4 Channels》

F4-04AD



A cover is available.

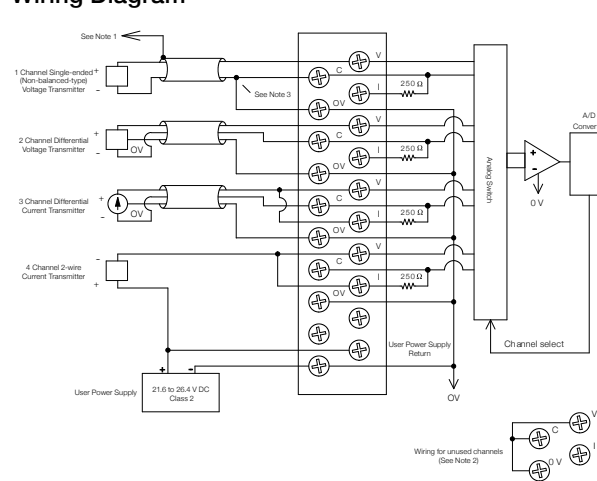
The photo shows the Japanese model.  
(The shape is the same.)

### Input Specifications

Items	Specifications
Number of Channels	4
Input Type	Single end (Non-balanced-type), derivative voltage or current
Input Range	0 to 5 V, 1 to 5 V, 0 to 10 V, ±5 V, ±10 V, 0 to 20 mA, 4 to 20 mA
Individually Configurable Channel	The range is selected as common for all channels. Each channel can be wired as voltage or current input.
Resolution	12-bit (0 to 4095) unipolar, 13-bit (-4095 to +4095) bipolar
Conversion Method	Integration method
Input Impedance	Minimum 20 MΩ: Voltage input, 250 Ω: 1/2 W, ±0.1%, 25 ppm/°C, current input
Maximum Continuous Overload	±50 V DC (Voltage input), ±45 mA (Current input)
Recommended Fuse	0.32 A, series 217, fast-blow, current input
Common Mode Voltage Range	Maximum ±10 V
Linearity	±0.025% of span (±1 count maximum, unipolar)
Input Stability	±1/2 count
Crosstalk	-80 dB, maximum 1/2 count
Full Scale Error	Maximum ±12 count (Voltage input), Maximum ±16 count (20.0 mA current input)
Offset Error	Maximum ±1 count (Voltage input), Maximum ±2 count (4.0 mA current input)
Maximum Error	Up to 0.4%: 25°C Up to 0.55%: 0 to 60°C
Conversion Time	< 6 ms (Per selected channel)
Noise Resistance	Normal mode: -3 dB (50 Hz), -6 dB/ octave Common mode: -70 dB, DC to 12 kHz
Analog Data Update	Minimum 1 channel, maximum 4 channels per scan
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, channel ID bit x 2, Sign bit x 1, transmitter trouble indication bit x 1) Optionally, the 32input point operation of the U-01AD compatibility mode is supported.
Accuracy Against Temperature	±45 ppm/°C, Full-scale change (Including 2 counts for the maximum offset change)
Insulation Resistance	10 MΩ, 500 V DC
Terminal Type	Removable 20P terminal block
Weight	290 g

Note 1: Shields should be grounded on the signal source sides.  
 Note 2: The shield should be grounded on the signal source side.  
 Note 3: To maximize noise resistance, unused channels should be short-circuited.

### Wiring Diagram



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O
- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/ Connector

# D4 Series

## Analog Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
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- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

### Input Module 《4 Channels》

F4-04ADS



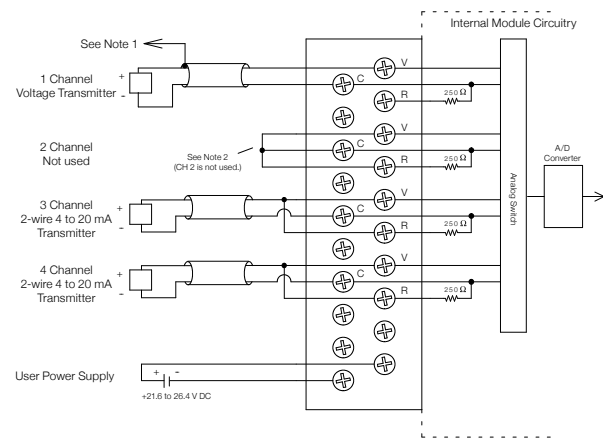
A cover is available.

#### Input Specifications (Isolation Specifications)

Items	Specifications
Number of Channels	4
Input Range	0 to 5 V, 0 to 10 V, 1 to 5 V, $\pm 5$ V, $\pm 10$ V, 0 to 20 mA, 4 to 20 mA
Individually Configurable Channel	Possible
Resolution	12-bit
Conversion Method	Successive approximation system
Input Type	Differentiation
Maximum Common Mode Voltage	$\pm 750$ V peak continuous transformer separation
Noise Resistance	Common-mode signal: -100 dB (60 Hz)
Active Low-pass Filtering	-3 dB (20 Hz), -12 dB per octave
Input Impedance	250 $\Omega$ $\pm 0.1\%$ , 1/2 W (Current input), 200 k $\Omega$ (Voltage input)
Absolute Maximum Rating	-45 mA to +45 mA (Current input), $\pm 100$ V (Voltage input)
Conversion Time	1 ms per selected channel
Linearity Error: Unipolar : Bipolar	Maximum $\pm 1$ count (0.025% of full scale) Maximum $\pm 2$ count (0.025% of full scale)
Full Scale Error	Maximum $\pm 8$ count ( $V_{in} = 20$ mA)
Offset Error	Maximum $\pm 8$ count ( $V_{in} = 4$ mA)
Analog Data Update	1 channel per scan
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, active channel ID bid x 4)
Recommended Fuse	0.032 A, series 217, fast-blow, current input
Operating Temperature	0°C to 60°C
Accuracy Against Temperature	Maximum $\pm 100$ ppm/°C full-scale (Including maximum offset)
Weight	323 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.  
 Note 1: Shields should be grounded on the signal source sides.  
 Note 2: Regarding unused channels, jumpers should be attached to the "V", "C", and "R" channels.

#### Wiring Diagram





- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Input Module 《8 Channels》

F4-08AD



A cover is available.

The photo shows the Japanese model.  
(The shape is the same.)

### Input Specifications

Items	Specifications
Number of Channels	8, single end (Non-balanced-type) (Common x 1)
Input Range	0 to 5 V, 0 to 10 V, 1 to 5 V, ±5 V, ±10 V, 0 to 20 mA, 4 to 20 mA
Individually Configurable Channel	Not possible. Separate channels can be configured by current or voltage, but the range must be the same.
Resolution	12-bit
Conversion Method	Successive approximation system
Active Low-pass Filtering	-3 dB (20 Hz), -12 dB per octave
Input Impedance	250 Ω ± 0.1%, 1/2 W (Current input), > 20 MΩ (Voltage input, minimum 1 MΩ)
Absolute Maximum Rating	-45 mA to +45 mA (Current input), -75 V to +75 V (Voltage input)
Conversion Time	0.4 ms per channel (Module conversion), minimum 1 ms per selected channel (CPU)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Input Stability	±1/2 count
Full Scale Error	±12 count (Voltage input) Maximum ±12 count (20 mA current input)
Offset Error	Maximum ±2 count (Unipolar voltage input) Maximum ±4 count (Bipolar voltage input) Maximum ±4 count (4 mA current input)
Analog Data Update	Minimum 1 channel, maximum 8 channels per scan
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, active channel bid x 3, unused bit x 1)
Recommended Fuse	0.032 A, series 217, fast-blow, current input
Operating Temperature	0°C to 60°C
Accuracy Against Temperature	Maximum ±50 ppm/°C full scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	290 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Note 1: Shields should be grounded on the signal source sides.

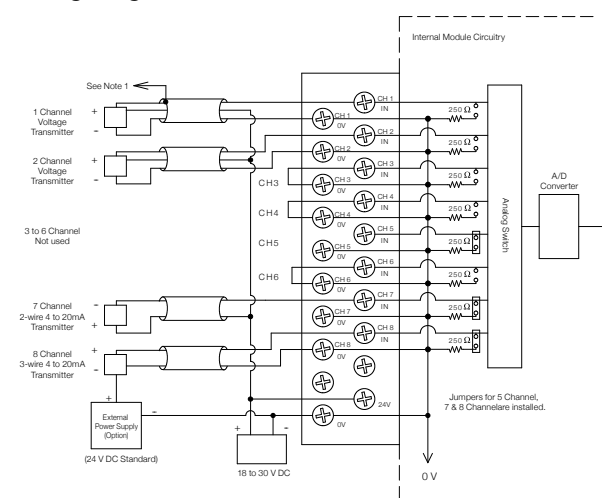
Note 2: The unused channels should be connected or current jumpers should be attached to them. Several external power sources can be used. (See channel 8.) When a 4 to 20 mA current loop is used, it is recommended to use a 217 series 0.032 A, fast-blow fuse.

If the power source common of the external power source is not connected to the 0 V DC of this module, be sure to isolate the output of the external transmitter. To prevent a "ground loop" error, it is recommended to use the following types as a 4 to 20 mA transmitter.

2-wire system or 3-wire system: One in which the input signal is isolated from the power source.

4-wire system: One in which the input signal, power source, and 4 to 20 mA output are isolated from one another.

### Wiring Diagram



# D4 Series

## Analog Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

### Input Module 《16 Channels》

F4-16AD-1



A cover is available.

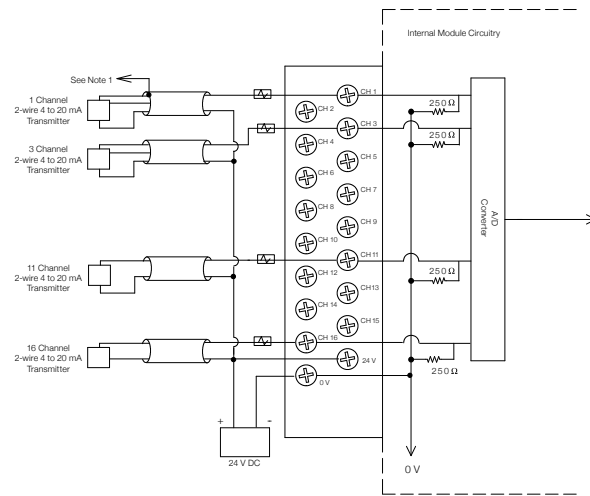
The photo shows the F4-04ADS.  
(The shape is the same.)

#### Input Specifications

Items	Specifications
Number of Channels	16, single end (Non-balanced-type) (Common x 1)
Input Range	0 to 20 mA, 4 to 20 mA
Individually Configurable Channel	Not possible. Separate channels can be configured by current or voltage, but the range must be the same.
Resolution	12-bit
Active Low-pass Filtering	-3 dB (20 Hz), -12 dB per octave
Input Impedance	250 Ω ± 0.1%, 1/2 W (Current input), > 20 MΩ (Voltage input, minimum 1 MΩ)
Absolute Maximum Rating	-45 mA to +45 mA (Current input), -75 V to +75 V (Voltage input)
Conversion Time	2 ms per channel (Module conversion)
Linearity Error (End-to-end)	Maximum ±2 count (0.025% of full scale)
Input Stability	±1 count
Full Scale Error	Maximum ±12 count (20 mA current input, the erroneous offset is not included.)
Offset Error	Maximum ±3 count (4 mA current input)
Analog Data Update	Minimum 1 channel, maximum 16 channels per scan
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, active channel bid x 4)
Recommended Fuse	0.032 A, series 217, fast-blow, current input
Accuracy Against Temperature	Maximum ±50 ppm/°C full scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	329 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.  
 Note 1: Shields should be grounded on the signal source sides. When a 4 to 20 mA current loop is used, it is recommended to use a 217 series 0.032 A, fast-blow fuse.  
 If the power source common of the external power source is not connected to the 0 V DC of this module, be sure to isolate the output of the external transmitter. To prevent a "grand loop" error, it is recommended to use the following types as a 4 to 20 mA transmitter.  
 2-wire system or 3-wire system: One in which the input signal is isolated from the power source.  
 4-wire system: One in which the input signal, power source, and 4 to 20 mA output are isolated from one another.

#### Wiring Diagram



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Input Module 《16 Channels》

F4-16AD-2



A cover is available.

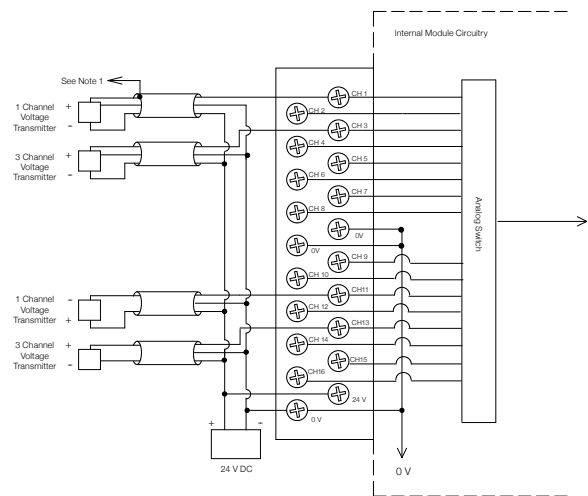
The photo shows the F4-04ADS.  
(The shape is the same.)

#### Input Specifications

Items	Specifications
Number of Channels	16, single end (Non-balanced-type) (Common x 1)
Input Range	0 to 5 V, 0 to 10 V
Individually Configurable Channel	Not possible. Separate channels can be configured by current or voltage, but the range must be the same.
Resolution	12-bit
Active Low-pass Filtering	-3 dB (20 Hz), -12 dB per octave
Input Impedance	Minimum 1 MΩ
Absolute Maximum Rating	130 V AC, 100 V DC
Conversion Time	0.4 ms per channel (Module conversion), minimum 2 ms per selected channel (CPU)
Linearity Error (End-to-end)	Maximum ±2 count (0.050% of full scale)
Input Stability	±1 count
Full Scale Error	±12 count (Voltage input, the erroneous offset is not included.)
Offset Error	Maximum ±3 count (Unipolar voltage input)
Analog Data Update	Minimum 1 channel, maximum 16 channels per scan
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, Active channel bid x 4)
Accuracy Against Temperature	Maximum ±50 ppm/°C full scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	326 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.  
 Note 1: Shields should be grounded on the signal source sides. Several external power sources can be used. (See channel 8.) If the power source common of the external power source is not connected to the 0 V DC of this module, be sure to isolate the output of the external transmitter.

#### Wiring Diagram



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

# D4 Series

## Analog Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

### Output Module 《4 Channels》

F4-04DA-1



The photo shows the F4-16DA-1.  
(The shape is the same.)

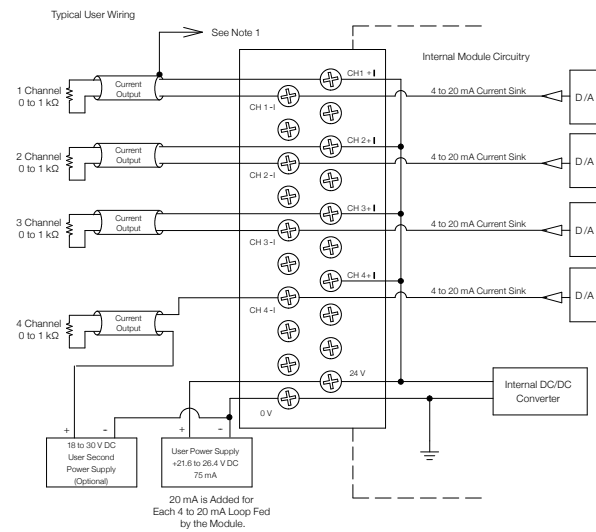
A cover is available.

### Output Specifications

Items	Specifications
Number of Channels	4, single end (Common x 1)
Output Range	4 to 20 mA current
Resolution	12-bit
Output Type	Output sink, 4 to 20 mA (From external power supply)
External Load Resistance	Minimum 0 Ω
Maximum Loop Power Supply	30 V DC
Maximum Output Voltage	40 V DC (Fixed, transient suppressor)
Maximum Load/Power Supply	620 Ω/18 V, 910 Ω/24 V, 1,200 Ω/30 V
Linearity Error (Fit)	Maximum ±1 count (±0.025%)
Gain Error	Maximum ±5 count
Offset Error	Maximum ±3 count
Maximum Error	±0.1%: 25°C Maximum ±0.3%: 0 to 60°C
Conversion Time	Maximum 100 μs (Settling time), Maximum 2.0 ms (Digital output → Analog output)
Number of Occupied Outputs	Output 16 points (Q) (Binary data bit x 12, Active channel bid x 4)
Accuracy Against Temperature	±57 ppm/°C full-scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	268 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.  
 Note 1: Regarding the shield, the "0 V" of the user power supply should be connected to the module terminal block.  
 Note 2: The unused current output should be left open (unconnected).

### Wiring Diagram



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Output Module 《4 Channels》

F4-04DA-2



A cover is available.

The photo shows the F4-16DA-1.  
(The shape is the same.)

### Output Specifications

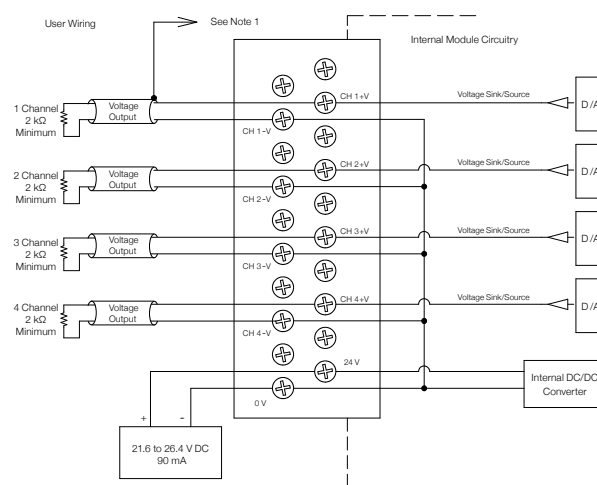
Items	Specifications
Number of Channels	4 (Single end), common x 1
Output Range	0 to 5 V, 0 to 10 V, $\pm 5$ V, $\pm 10$ V
Individually Configurable Channel	Possible
Resolution	12-bit
Load impedance	Minimum 2 k $\Omega$
Load Capability	Maximum 0.01 $\mu$ F
Voltage Output Current	5.0 mA sink or source
Short-circuit Current	Standard 15 mA
Linearity Error (End-to-end) and Relative Accuracy	Maximum $\pm 1$ count ( $\pm 0.025\%$ )
Offset Error	Maximum $\pm 3$ count (Unipolar), Maximum $\pm 4$ count (Bipolar)
Full Scale Error	Maximum $\pm 8$ count (Including erroneous offset)
Maximum Error	$\pm 0.2\%$ : 25°C $\pm 0.4\%$ : 0 to 60°C
Conversion Time	Maximum 5 $\mu$ s (Settling time), Maximum 0.2 ms (Digital output $\rightarrow$ Analog output)
Number of Occupied Outputs	Output 16 points (Q) (Binary data bit x 12, active channel bid x 4 or active channel bid x 2 and Sign bit x 1 (Bipolar))
Accuracy Against Temperature	$\pm 57$ ppm/°C full-scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	271 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Note 1: Regarding the shield, the "0 V" of the user power supply should be connected to the module terminal block.

Note 2: The unused current output should be left open (unconnected).

### Wiring Diagram



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O
- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/ Connector

# D4 Series

## Analog Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

### Output Module 《8 Channels·16 Channels》

F4-08DA-1

F4-16DA-1



A cover is available.



A cover is available.

The photo shows the F4-16DA-1.  
(The shape is the same.)

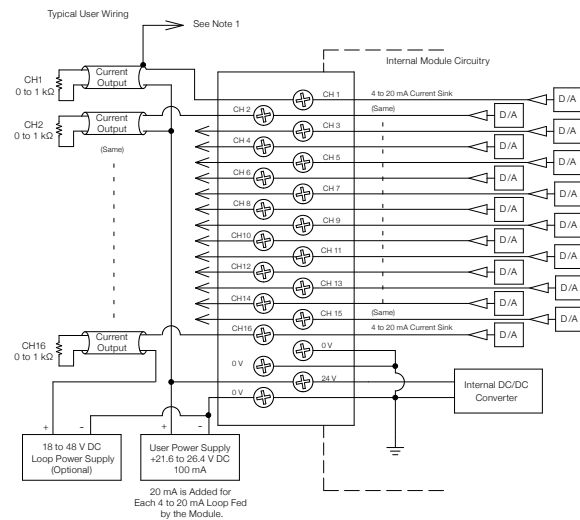
### Output Specifications

Items	Specifications
Number of Channels F4-08DA-1 F4-16DA-1	8 (Single end, common x 1) 16 (Single end, common x 1)
Output Range	4 to 20 mA
Resolution	12-bit
Output Type	Current sinking 4 to 20 mA (From external power supply)
Maximum Output Voltage	40 V DC (No transient voltage protection)
External Load Resistance	0 to 480 Ω (18 V), 220 to 740 Ω (24 V), 1,550 to 1,760 Ω (48 V)
Maximum Loop Power Supply	48 V DC (A load resistance of proper range is used.)
Crosstalk	-70 dB, Maximum ±1 count
Linearity Error (End-to-end) and Relative Accuracy	Maximum ±1 count
Full Scale Error	Maximum ±8 count (20.0 mA, 25°C, including erroneous offset)
Offset Error	Maximum ±3 count (4.0 mA, 25°C)
Maximum Error	±0.2%: 25°C ±0.4%: 0 to 60°C
Conversion Time	Maximum 400 μs (Full-scale change), 2.25 to 4.5 ms (Digital output → Analog output)
Number of Occupied Outputs	F4-08DA-1: Output 16 points (Q) (Binary data bit x 12, channel selection bit x 3, output enable bit x 1) F4-16DA-1: Output 32 points (Q), 2 sets each (Binary data bit x 12, channel selection bit x 3, output enable bit x 1)
Accuracy Against Temperature	±57 ppm/°C full-scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	F4-08DA-1: 317 g F4-16DA-1: 328 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.  
Note 1: Regarding the shield, the "0 V" of the user power supply should be connected to the module terminal block.

Note 2: The unused current output should be left open (unconnected).

### Wiring Diagram



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Output Module 《8 Channels·16 Channels》

F4-08DA-2



A cover is available.

The photo shows the F4-16DA-1. (The shape is the same.)

F4-16DA-2



A cover is available.

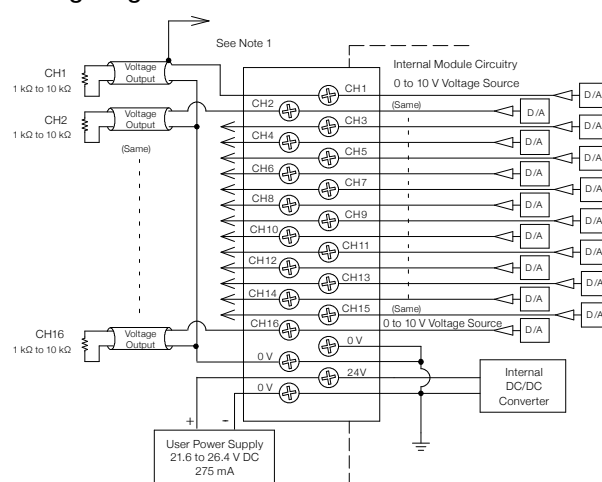
The photo shows the F4-16DA-1. (The shape is the same.)

### Output Specifications

Items	Specifications
Number of Channels F4-08DA-2 F4-16DA-2	8 (Single end, common x 1) 16 (Single end, common x 1)
Output Range	0 to 5 V DC, 0 to 10 V DC
Resolution	12-bit
Output Type	Voltage source maximum 10 mA
External Load Resistance	Maximum 1 kΩ/ minimum 10 kΩ (Example: 10 V (1 kΩ) = 10 mA load)
Crosstalk	-70 dB, Maximum ±1 count
Linearity Error (End-to-end) and Relative Accuracy	Maximum ±1 count (DC 10 V, 25°C)
Full Scale Error	Maximum ±6 count (DC 10 V, 25°C, including erroneous offset)
Offset Error	Maximum ±3 count (0 V DC, 25°C)
Maximum Error	±0.2%: 25°C ±0.4%: 0 to 60°C
Conversion Time	Maximum 400 μs (Full-scale change), 4.5 to 9 ms (Digital output → Analog output)
Number of Occupied Outputs	F4-08DA-2: Output 16 points (Q) (Binary data bit x 12, channel selection bit x 3, output enable bit x 1) F4-16DA-2: Output 32 points (Q) (Binary data bit x 12 x 2 sets, channel selection bit x 3, output enable bit x 1)
Accuracy Against Temperature	±57 ppm/°C full-scale (Including 2 counts for the maximum offset change)
Terminal Type	Removable 20P terminal block
Weight	F4-08DA-2: 370 g F4-16DA-2: 276 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.  
Note 1: Regarding the shield, the "0 V" of the user power supply should be connected to the module terminal block.

### Wiring Diagram



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O
- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/ Connector

# D4 Series

## Analog Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

### Output Module 《4 Channels》

F4-04DAS-1



A cover is available.

The photo shows the F4-16DA-1.  
(The shape is the same.)

### Output Specifications (Isolation Specifications)

Items	Specifications
Number of Channels	4 (Current source, isolation specifications)
Output Range	4 to 20 mA current
Resolution	16-bit
Output Type	Output source 4 to 20 mA (From external power supply)
Isolation Voltage	±750 V continuous, channel-to-channel, channel → logic
Loop Power Supply	12 to 32 V DC
Output Loop Compliance	Vin to 2.5 V
Load impedance	0 to 1375 Ω (32 V)
Maximum Load/Power Supply	375 Ω/12 V, 975 Ω/24 V, 1375 Ω/32 V
Analog Data Update	Minimum 1 channel, maximum 4 channels per scan
Number of Occupied Outputs	Output 32 points (Q) (Binary data bit x 16, channel ID bid x 2, output enable bit x 1)
Linearity Error (End-to-end)	Maximum ±10 count (0.015% of full scale)
Conversion Settling Time	3 ms ~ 0.1% of full scale
Gain Error	±32 count (±0.05%)
Offset Error	±13 count (±0.02%)
Accuracy Against Temperature	50 ppm/°C
Maximum Error	±0.07%:25°C Maximum ±0.18%:0 to 60°C
Terminal Type	Removable 20P terminal block
Weight	278g

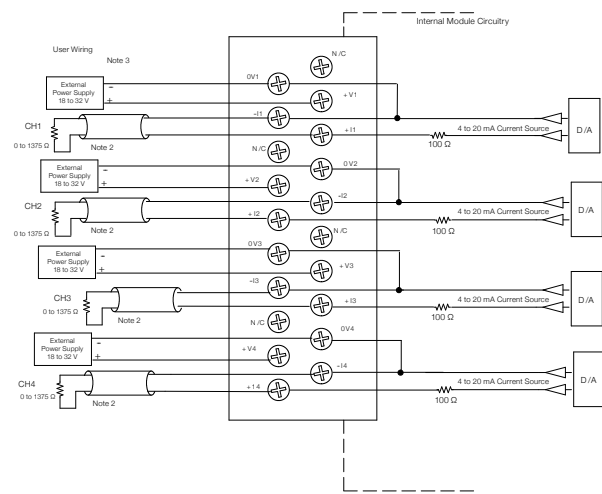
"1 count" in the specifications table is equivalent to 1 least significant bit (65536 gradation) of the analog data value.

Note 1: The shield should be connected to "0 V."

Note 2: The load must be within the compliance voltage.

Note 3: Regarding non-isolated outputs, all 0 V terminals (0 V1 to 0 V4) and all V terminals (+V1 to +V4) should be respectively connected together.

### Wiring Diagram





- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Output Module 《4 Channels》

F4-04DAS-2



A cover is available.

The photo shows the F4-16DA-1.  
(The shape is the same.)

### Output Specifications (Isolation Specifications)

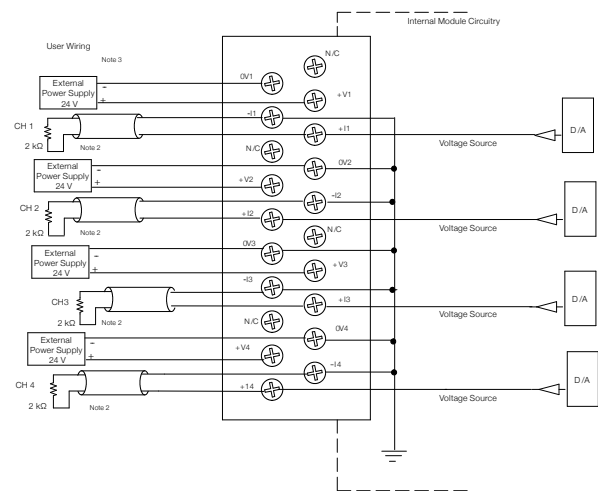
Items	Specifications
Number of Channels	4 (Isolation specifications)
Output Range	0 to 5 V DC, 0 to 10 V DC
Resolution	16-bit
Isolation Voltage	±750 V continuous, channel-to-channel, channel → logic
Load impedance	Minimum 2 kΩ
Analog Data Update	Minimum 1 channel, maximum 4 channels per scan
Number of Occupied Outputs	Output 32 points (Q) (Data bit x 16, channel ID bid x 2, output enable bit x 1)
Linearity Error (End-to-end)	Maximum ±10 count (0.015% of full scale)
Conversion Settling Time	3 ms ~ 0.1% of full scale
Gain Error	±32 count (±0.05%)
Offset Error	±13 count (±0.02%)
Maximum Error	±0.07%: 25°C Maximum ±0.18%: 0 to 60°C
Terminal Type	Removable 20P terminal block
Weight	299 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Note 1: The shield should be connected to "0 V."

Note 2: The load must be within the compliance voltage.

### Wiring Diagram



- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

# D4 Series

## Analog Module

- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O

- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
- Accessories/Connector

### Temperature Input Module 《8 Channels》

F4-08THM



#### General Specifications

Items	Specifications
Number of Channels	8, differentiation
Common Mode Signal Range	±5 V DC
Common Mode Rejection Ratio	Minimum 90 dB (DC), minimum 150 dB (50/60 Hz)
Input Impedance	1 MΩ
Absolute Maximum Rating	Failure protection input to maximum ±50 V DC
Accuracy Against Temperature	Maximum ±5 ppm/°C full-scale (Including for the maximum offset change)
Analog Data Update	8 channels per maximum scan
Number of Occupied Inputs	32 points (Binary data bit x 16, channel ID bid x 2, diagnosis bit x 4)

#### Voltage Input Specifications

Items	Specifications
Voltage Range	0 to 5 V, ±5 V, 0 to 156.25 mV, ±156.25 mV DC
Resolution	16-bit
Full Scale Error	Standard ±13 count, Maximum ±33 count, the erroneous offset is included.
Offset Error	Maximum ±1 count (0 V input)
Linearity Error (End-to-end)	Maximum ±1 count
Maximum Error	±0.02%: 25°C

#### Thermocouple Specifications

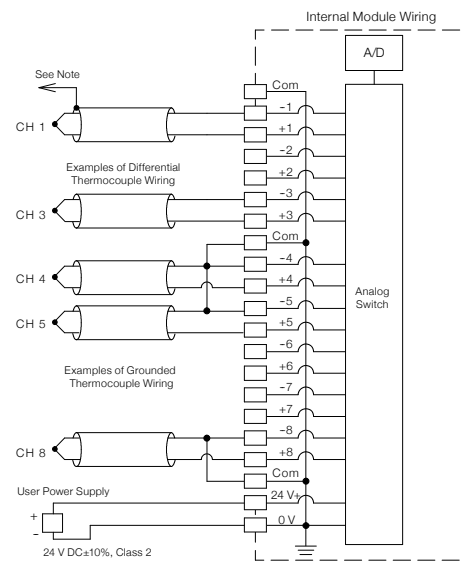
Specifications	
Input Range*	J type: -190°C to 760°C (-310°F to 1,400°F) E type: -210°C to 1,000°C (-346°F to 1,832°F) K type: -150°C to 1,372°C (-238°F to 2,502°F) R type: 65°C to 1,768°C (149°F to 3,214°F) S type: 65°C to 1,768°C (149°F to 3,214°F) T type: -230°C to 400°C (-382°F to 752°F) B type: 529°C to 1,820°C (-984°F to 3,308°F) N type: -70°C to 1,300°C (-94°F to 2,372°F) C type: 65°C to 2,320°C (149°F to 4,208°F)
Display Resolution	±0.1°C or ±0.1°F
Cold Junction Compensation	Automatic
Conversion Time	100 ms/channel
Warm-Up Time	30 minutes (Standard) ±1°C repeatability
Linearity Error (End-to-end)	Maximum ±0.05°C, standard ±0.01°C
Maximum Error	±3°C (Do not include thermocouple error.)
Weight	229 g

Note 1: Shield should be terminated on the respective signal source sides.

Note 2: The unused channel should be left open (unconnected).

\* The type of thermocouple can be set when the internal jumper is set.

#### Wiring Diagram



- PLC
- HMI
- SENSOR
- ENCODER
- COUNTER
- INFORMATION

# D4 Series

## Analog Module

### Temperature Input Module 《8 Channels》

F4-08RTD



A cover is available.

The photo shows the F4-16DA-1.  
(The shape is the same.)

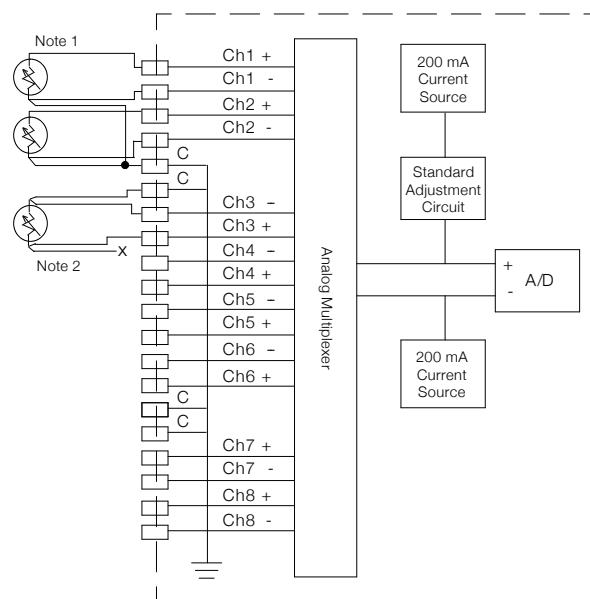
#### Input Specifications

Items	Specifications
Number of Channels	8
Input Range	Pt100 Type: -200°C to 850°C (-328°F to 1,562°F) Pt1000 Type: -200°C to 595°C (-328°F to 1,103°F) jPt100 Type: -38°C to 450°C (-36°F to 842°F) CU-10/25W Type: -200°C to 260°C (-328°F to 500°F)
Resolution	16-bit
Input Impedance	27 kΩ DC
Display Resolution	±0.1°C
Resistance Thermometer Bulb-excited Current	200 μA
Input Type	Differentiation
Notch Filter	> 100 dB notch (50/60 Hz), -3 dB = 13.1 Hz
Maximum Settling Time	100 ms (Full-scale step input)
Common Mode Signal Range	0 to 5 V DC
Absolute Maximum Rating	Failure protection input to DC ±50 V
Converter Type	Charge Balancing
Linearity Error (End-to-end)	Maximum ±1°C, standard ±0.01°C
Full Scale Error	±1°C
Analog Data Update	Minimum 1 channel, maximum 8 channels per scan
Number of Occupied Inputs	Input 32 points (I) (Binary data bit x 15, channel ID bit x 3, Sign bit x 1, fault bit x 8)
Weight	270 g

Note 1: The three cables that connect the resistance thermometer bulb to the module should be the same kind and have the same length.  
Do not use shielded wire or drain wire for the third connection.

Note 2: If the resistance thermometer bulb sensor is a 4-wire system, do not connect the detection (+) wire as shown in the figure.







#### Wiring Diagram



- Common Subject Matter
- SJ-ETHER/SJ
- DL05/06
- DL205
- D4**
- D3
- Programmer
- KPP
- DirectSOFT
- Terminator I/O
- Features
- Specifications
- Dimensions
- CPU Specifications
- Special Module
- Input/Output Module
- Analog Module**
- Base Unit
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# D4 Series

## Base Unit

- PLC 
- HMI 
- SENSOR 
- ENCODER 
- COUNTER 
- INFORMATION 

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### Base

D4-04B-1 D4-06B-1 D4-08B-1



The photo shows the D4-06B-1.

### Outline

This base unit creates D4 systems.  
 The bases with expansion functions can be used both as the primary base and expansion base.  
 If used as an expansion base with 64 I/O points, the U-1□B should be used.

### Base Unit Equipped with 4, 6, and 8 Slots

For the D4 series product family, base units equipped with 4 slots, 6 slots, and 8 slots are available.



### Model Number List

Model Number	D4-04B-1	D4-06B-1	D4-08B-1
Number of Slots	4	6	8
Power Source	Available		
Installation	Keyhole aperture (for M5 screws)		
Weight (g)	660	830	990

- PLC
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# D4 Series

## Base Unit

### Extension Power Source

D4-EX D4-EXDC



The photo shows the Japanese model.  
(The shape is the same.)

#### Outline

The extension power source is required only when local expansion should be realized. The expansion unit is inserted into the CPU slot of the expansion base unit. Although the expansion power appears similar to a CPU, it has only a built-in power source. Since the CPU of the D4 series is inserted into a dedicated slot of the base unit, it does not occupy the input/output slot. The same applies to the expansion power source and the remote slave unit (D4-RS). For the connection of each expansion base unit and CPU base unit, a base expansion cable (D4-EXCBL-1 or D4-EXCBL-2) is required.

#### Expansion Base Cable

An expansion base cable is required to connect the expansion base to the CPU base. Cables cannot be extended.



Model Number	D4-EXCBL-2	D4-EXCBL-1
Cable Length	0.5 m	1.0 m
Minimum Bend Radius	40 mm	

#### D4-450/D4-454 Base Unit and 1x Base Unit

In earlier types of D4 series system, special I/O such as a 64-point module were limited to the CPU base unit. To remove this restriction, the "-1" base unit and the D4-450/D4-454 CPU must be used. The model numbers of new base units are "D4-04B-1", "D4-06B-1", and "D4-08B-1". (Note: The dedicated module cannot be mounted on an expansion base unit simply by adding the "-1" base unit to the existing system. It is necessary to replace the CPU and all other expansion base units.) Although the "-1" base unit can be added to the existing system, the restrictions of the normal base unit will remain.

#### Specifications

Model Number	D4-EX	D4-EXDC
Rated Output Voltage	100/110/200/220 V AC (Switched by the shorting bar) 50/60 Hz	24 V DC
Allowable Voltage Variation Range	85 to 132 V AC/170 to 264 V AC	20 to 28 V DC
Maximum Apparent Voltage	80 VA	38 W
Inrush Current	20 A	20 A
Output Voltage/Current	24 V DC/0.4 A 5 V DC/4 A	5 V DC/4 A
Withstand Voltage	1 min (1,500 V AC is applied between primary, secondary, field grounds, and RUN relay.)	1 min (1,500 V AC is applied between primary, secondary, field grounds, and RUN relay.)
Insulation Resistance	> 10 MΩ (500 V DC applied)	> 10 MΩ (500 V DC applied)
Weight (g)	660	680
Dimensions	150 H x 110 W x 100 D	150 H x 110 W x 100 D
Accessories	Shorting bar, 2 units	Shorting bar, 2 units

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#### Base Unit

Accessories/  
Connector

# D4 Series

## Accessories/Connector

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- Features
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### One-end Loose Wire Cable 64 Points I/O Option

U-30JH



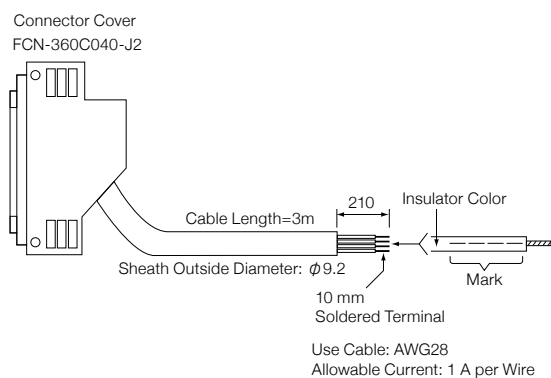
#### Wiring Table of U-30JH

D4-64ND2/D4-64TD1				Loose Wire			
CN1 Signal Name		CN2 Signal Name		Support Line A		Support Line B	
Line A	Line B	Line A	Line B	Insulator	Mark	Insulator	Mark
00	04	40	44	Orange	1	Orange	2
01	05	41	45	Gray	1	Gray	2
02	06	42	46	White	1	White	2
03	07	43	47	Yellow	1	Yellow	2
C1	*1	C5	*5	Pink	1	Pink	2
10	14	50	54	Orange	3	Orange	4
11	15	51	55	Gray	3	Gray	4
12	16	52	56	White	3	White	4
13	17	53	57	Yellow	3	Yellow	4
C2	*2	C6	*6	Pink	3	Pink	4
20	24	60	64	Orange	5	Orange	6
21	25	61	65	Gray	5	Gray	6
22	26	62	66	White	5	White	6
23	27	63	67	Yellow	5	Yellow	6
C3	*3	C7	*7	Pink	5	Pink	6
30	34	70	74	Orange	7	Orange	8
31	35	71	75	Gray	7	Gray	8
32	36	72	76	White	7	White	8
33	37	73	77	Yellow	7	Yellow	8
C4	*4	C8	*8	Pink	7	Pink	8

Note)

Symbol	D4-64ND2	D4-64TD1
*1	0V	V1
*2	0V	V2
*3	0V	V3
*4	0V	V4
*5	0V	V5
*6	0V	V6
*7	0V	V7
*8	0V	V8

#### External View



#### Mark List

No.	Color	Mark
1	Red	—
2	Blue	—
3	Red	— —
4	Blue	— —
5	Red	— — —
6	Blue	— — —
7	Red	— — — —
8	Blue	— — — —

- PLC
- HMI
- SENSOR
- ENCODER
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- INFORMATION

# D4 Series

## Accessories/Connector

### Connector Power Cable 64 Points I/O Option

U-30JP

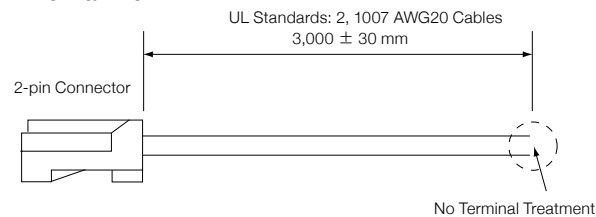


#### Outline

This cable is designed to connect the 24 V DC power source that supplies power to the 64 point I/O module.

Signal	Cable color
+24 V	Red
0 V	Black

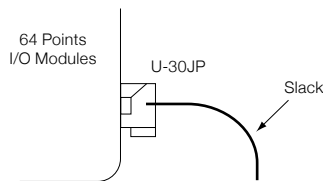
#### External View



Note: The terminals of cable are not prepared.  
Prepare terminals to enable crimping, etc. as needed by the power source to be connected.

#### Precautions in Wiring

The 64-point I/O module side should be wired so that there is a slack.



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**Accessories/Connector**

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