

SJ-ETHER/SJ Series

CPU Specifications

Ethernet Analog Type (DC Input 4 Points, Analog Input 2 Channels, DC (Sourcing) Output 4 Points, Analog Output 2 Channels)

SJ-12DD2EP-D



General Specifications

Items	Specifications
Supply Voltage	24 V DC
Supply Voltage Variation Range	20 to 28 V DC
Power Consumption	Not more than 5 W (When communications port parasitic)
Power Source Inrush Current	30 A or less (1 ms or less)
Allowable Instantaneous Power Failure Time	Up to 10 ms
Operating Ambient Temperature	0°C to 55°C IEC60068-2-14 (Temperature change test)
Storage Ambient Temperature	-20°C to 70°C IEC 60068-2-1 (Test Ab low temperature) IEC 60068-2-2 (Test Bb high temperature low humidity) IEC 60068-2-14 (Test Na temperature change)
Use / Storage Ambient Humidity	30% to 90% (No condensation)
Surrounding Atmosphere in Place of Use	No corrosive gases Environmental pollution level 2 (UL 840)
Vibration Resistance	Compliant with MIL STD 810C, Method 514.2, IEC60068-2-6, JIS C60068-2-6, and sine wave oscillation test method
Impact Resistance	Compliant with MIL STD 810C, Method 516.2, IEC60068-2-27 and JIS C60068-2-27
Noise Resistance (Immunity)	Impulse 1,000 V 1 ms pulse EN61000-4-2 (ESD), EN61000-4-3 (RFI), EN61000-4-4 (FTB), EN61000-4-5 (Surge), EN61000-4-6 (Conducted interference), EN61000-4-8 (Magnetic fields)
Radiation	EN55011: 1998 Class A
Conformance Standard	UL508, UL60079-15 Zone 2, CE (EN61131-2)
Other	Compliant with RoHS

Performance Specifications

Items	Specifications
Control System	Stored program: Cyclic arithmetic processing system
Input/Output Control System	Combination of batch transmission system and direct input/output system
Language System	Simultaneous use of relay symbol type and stage type
Number of Instructions	Sequence instructions: 68, program execution control instructions: 166, data processing instructions: 82, IBox instructions: 19
Processing Speed	Sequence instructions: 0.1 μs or less Data processing instructions: 0.2 μs ~
Standard Scan Time	1.5 ms (1 K word boolean calculations per hour)
Implemented Input/Output Points	Input 4 points/Output 4 points Analog input 2 points/Analog output 4 points
Program Memory Capacity (Word)	Program 7.5 K + System parameter 0.5 K
Input Relay (I)	1,024 points (I 0 to 1,777)
Output Relay (Q)	1,024 points (Q 0 to 1,777)
Link Relay (GI)	2,048 points (GI 0~3,777)
Link Relay (GO)	2,048 points (GI 0~3,777)
Internal Relay (M)	2,048 points (M 0 to 3,777)
Stage (S)	1,024 points (S 0 to 1,777)

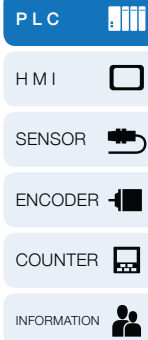
Timer (S)	256 points (T 0 to 377)
Counter (C)	128 points (C 0 to 177)
Special Relay (SP)	512 points (SP 0 to 777)
Timer Elapsed Value Register	256 word (R 0 to 377)
Counter Elapsed Value Register	256 word (R 0 to 377)
Data Register	12,960 words (R 400 to 7777, R 1,400 to 7,377, R 10,000 to 27,777)
Special Register	1,280 word (R 7,400 to 7,777)
Accumulator	32-bit x 1
Data Stack	32-bit x 8 stack
Calendar, Clock	Available (real time clock) (year, month, date, day of the week, hours, minutes, seconds) Battery-less mode retention time: 6 hours
Password	BCD8 digit 2 level (Usual password, restricted password)
Input/Output Allocation	Free location (Only for automatic allocation)
PID Function	16-loops
Power Failure Holding	Can retain the bit areas (M, S, T, C), some counter elapsed value registers, data registers and special registers during power failures.
Diagnosis Function (Hardware)	- Watchdog timer - Battery voltage reduction
Diagnosis Function (Software)	- I/O arrangement check - Program memory check - Calculation monitoring timer - Communication error (Programmer port, general-purpose communication port)
Communication Function: Port 1 (Programmer Port)	RS-232C conformance modular 6P connector (RJ-12) [Fixed mode] 9,600bps/protocol: DirectNET(M/S), MODBUS(M/S), K sequence(S) [General mode] 2,400, 4,800, 9,600, 19,200, 38,400/Protocol: DirectNET (M/S), MODBUS (M/S), Non-procedural (M/S), K sequence (S)
Communication Function: Port 2 (General Communications Port)	RS-485 conformance (uninsulated)/ 2,400, 4,800, 9,600, 19,200, 38,400 bps/ 3 pin terminal station Protocol: DirectNET (M/S), MODBUS (M/S), K sequence (S)
Communication Function: Port 3 (General communications port)	Ethernet/10 Mbps/100 Mbps auto switch (10 BASE/100 Base)/8 pin Protocol: EtherNet/IP (slave)/ Modbus/TCP (master/slave)

Input Specifications (I0 to 3)

Items	Specifications
Number of Input Points	4 points (Sink/source)
Operating Voltage	24 V DC
Input Voltage Range	21.6 to 26.4 V DC
Input Current	Typ 6.5 mA (24 V DC)
Maximum Input Current	7 mA (26.4 V DC)
Input Impedance	3.9 kΩ (24 V DC)
On-state Voltage	> 19 V DC
Off-state Voltage	< 2 V DC
Minimum On Current	4.5 mA
Maximum Off Current	0.5 mA
Response Time	OFF→ON Typ 3 μs Up to 5 μs ON→OFF Typ 1 μs Up to 3 μs
Status Indicators	Logic side (4 points, green LED)
Common	1 (4 points/common)

SJ-ETHER/SJ Series

CPU Specifications


Common
Subject Matter

SJ-ETHER/SJ

DL05/06

DL205

D4

D3

Programmer

KPP

DirectSOFT

Terminator I/O

Features

Specifications

Dimensions

CPU Specifications

Power Supply
Module

Input/Output
Module

Analog Module

Output Specifications (Q0 to 3)

Items	Specifications
Number of Outputs Points	4 points (Source)
Operating Voltage	24 V DC
Output Voltage Range	19.2 to 30 V DC
Maximum Output Current	0.1 A (Points) 0.4 A (Common)
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA (30 V DC)
ON-time Voltage Drop	0.5 V DC (0.1 A)
Maximum Inrush Current	150 mA (10 ms)
Response Time	OFF→ON < 5 μs ON→OFF < 5 μs
Status Indicators	Logic side (4 points, red LED)
Common	1 (4 points or 1 point/common)

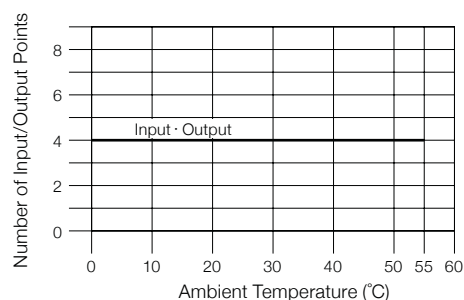
Analog input specifications

Items	Voltage Input Selection	Current Input Selection
Number of Input Points	Up to 2 points by selecting current input and voltage input	
Input Voltage Range	0 to 5 V DC	—
Input Current	—	4 to 20 mA (Sink)
Resolution	12-bit	12-bit
Input Response Time	50 ms	50 ms
Input Impedance	20 kΩ	125 Ω
Input Stability	Within ±2 LSB	Within ±2 LSB
Full-Scale Calibration Error	±2% or less	±2% or less
Offset Error	±25 mV or less	±0.1 mA or less
Temperature Accuracy	±100 ppm/°C or lower	±100 ppm/°C or lower

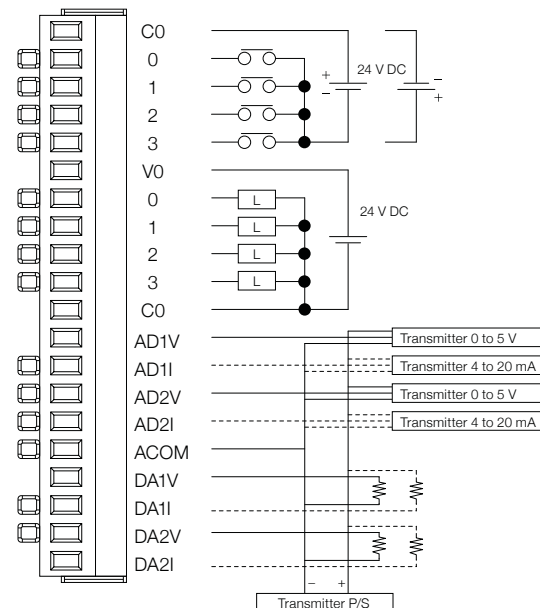
Analog output specifications

Items	Voltage Output Selection	Current Output Selection
Number of Outputs Points	Up to 2 points by selecting current output and voltage output	
Output Voltage Range	0 to 5 V DC	—
Output Current Range	—	4 to 20 mA (Sink)
Resolution	12-bit	12-bit
Conversion Time	1 ms	1 ms
Loop Supply Voltage	—	18 to 30 V DC
Load Impedance	2 kΩ or more (Output current 2.5 mA or less)	250 Ω Loop supply voltage 18 V DC: Up to 600 Ω 24 V DC: Up to 900 Ω 30 V DC: Up to 1,200 Ω
Full-Scale Calibration Error	±2% or less	±2% or less
Offset Error	±25 mV or less	±25 mA or less
Temperature Accuracy	±100 ppm/°C or lower	±100 ppm/°C or lower

Derating Chart



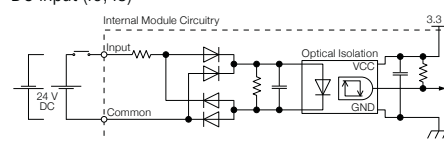
Wiring Diagram



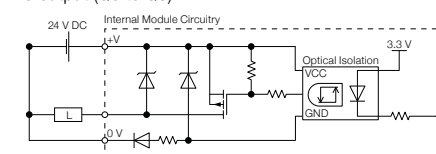
IMPORTANT: Use only one terminal (voltage or current) per channel. You must also select the analog type (voltage or current) in the CPU built-in I/O setup in the CLICK programming software (pull-down menu Setup > CPU Built-in I/O Setup).

Equivalent Circuit

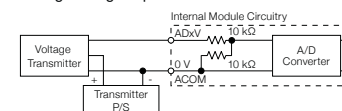
DC input (I0, I3)



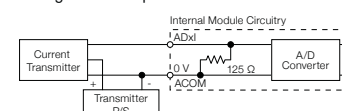
DC output (Q0 to Q3)



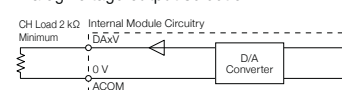
Analog voltage input selection



Analog current input selection



Analog voltage output selection



Analog current output selection

