SJ-ETHER/SJ Series

CPU Specifications

Ethernet Analog Type《DC Input 4 Points, Analog Input 2 Channels, Relay Output 4 Points, Analog Output 2 Channels》

SJ-12DREP-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 (GQ)	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)
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)

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Output Specifications (Q0 to 3)

Items		Specifications
Number of Outputs Points		4 points
Operating Voltage		6 to 27 V DC/6 to 240 V AC
Output Type		Relay format A (SPST)
AC Frequency		47 to 63 Hz
Maximum Output Current		1.0 A (Points) (Resistive)
Minimum Load Current		5 mA (5 V DC)
Maximum Inrush Current		3 A (10 ms)
Response Time	OFF→ON	< 15 ms
	ON→OFF	< 15 ms
Status Indicators		Logic side (4 points, red LED)
Common		1 (4 points/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 kΩ
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

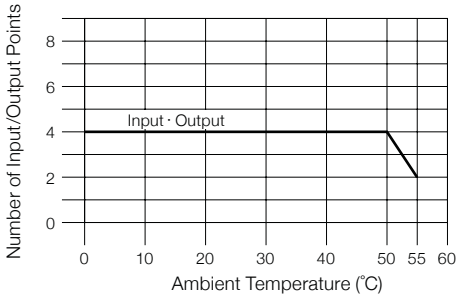
Analog output specifications

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 Loop supply voltage 24 V DC: Up to 900 Ω Loop supply voltage 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

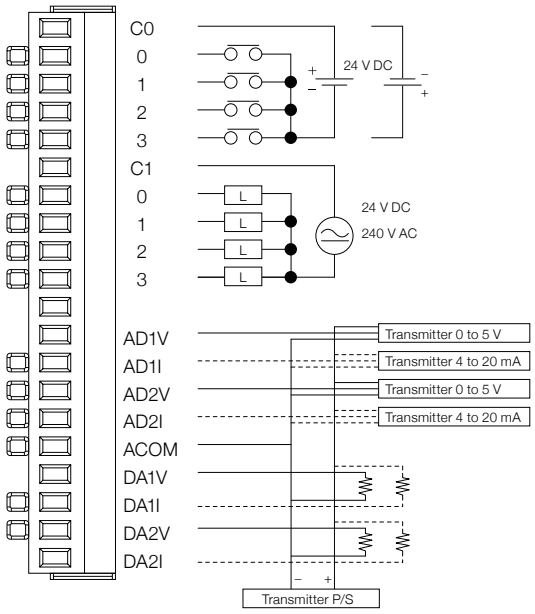
Relay life (ON → OFF 1cycle)

Load Conditions	Life
30 V DC, 1 A Resistance load	300,000 cycles or more
30 V DC, 1 A Inductive Load	50,000 cycles or more
120 V AC, 1 A Resistance Load	500,000 cycles or more
120 V AC, 1 A Inductive Load	200,000 cycles or more

Derating Chart



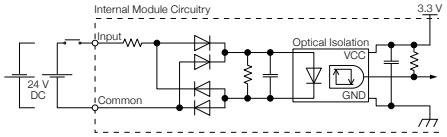
Wiring Diagram



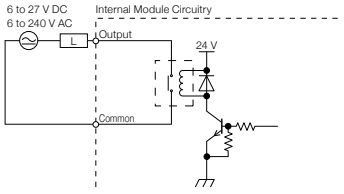
IMPORTANT: Use only one terminal (voltage or current) per channel. You must also select the analog type (voltage or current) in the CPU built-in I/O setup in the CLICK programming software (pull-down menu Setup > CPU Built-in I/O Setup).

Equivalent Circuit

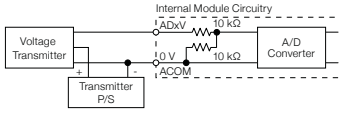
DC input (I0, I3)



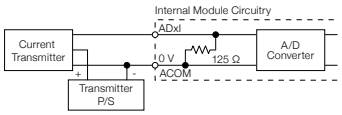
DC output (Q0 to Q3)



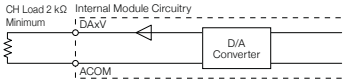
Analog voltage input selection



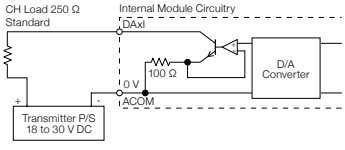
Analog current input selection



Analog voltage output selection



Analog current output selection



The specifications and prices described in this catalog were valid when the catalog was issued.
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