

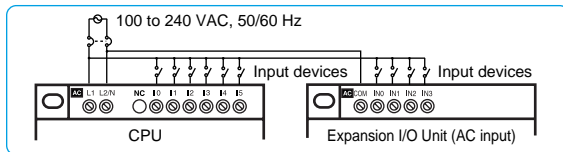
Specifications

Programmable Functionality

Name	Symbol	Bit addresses	No. of points	Operation
Input bits	I	I0 to I5	6	Reflect the ON/OFF status of the input devices connected to the input terminals on the CPU.
Expansion input bits	X	X0 to Xb	12	Reflect the ON/OFF status of the input devices connected to the input terminals on the Expansion I/O Units.
Output bits	Q	Q0 to Q3	4	The ON/OFF status of these output bits is used to control the output devices connected to the output terminals on the CPU.
Expansion output bits	Y	Y0 to Yb	12	The ON/OFF status of these output bits is used to control to the output devices connected to the output terminals on the Expansion I/O Units.
Work bits	M	M0 to Mf	16	Work bits can be used only within the ZEN program. I/Os for external devices cannot be made (i.e., all I/O is internal).
Holding bits	H	H0 to Hf	16	Used the same as the work bits. However, if the power to the ZEN is turned OFF, these bits also maintain the previous ON/OFF status.
Timers	T	T0 to T7	8	X: ON-delay timer
				■: (box) OFF-delay timer
				O: One-shot timer
				F: Flashing pulse timer
Functions are selected from the screen when parameter settings are made.				
Holding timers	#	#0 to #3	4	Hold the present value being counted even if the trigger input or power supply is turned OFF and continues timing when the trigger input or power is restored.
Counters	C	C0 to C7	8	Reversible counter that can be incremented and decremented.
Weekly timers	@	@0 to @7	8	Turn ON and OFF during specified times on specified days.
Calendar timers	*	*0 to *7	8	Turn ON and OFF between specified dates.
Display bits	D	D0 to D7	8	Display any character string, time, or analog-converted display of timer or counter present values.
Analog comparator bits	A	A0 to A3	4	Used as program input conditions to output analog comparator comparison results. These bits can be used only for 24-VDC input CPU.
Timer/counter comparator bits	P	P0 to P1	16	Compare the present values of timers (T), holding timers (#), and counters (C). Comparison can be made between the same two counters or timers, or with constants.
Button input bits	B	B0 to B7	8	Used as program input conditions and turn ON when operation keys are pressed in RUN Mode. These input bits can be used only with LCD-type CPU.

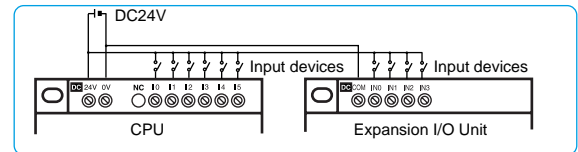
I/O Specifications

Units with AC Input



Input Specifications (AC Input)		CPU	Expansion I/O Unit
Input voltage		100 to 240 VAC (+10%/-15%), 50/60 Hz	
Input impedance		680 kΩ	83 kΩ
Input current		0.15 mA at 100 VAC 0.35 mA at 240 VAC	1.2 mA at 100 VAC 2.9 mA at 240 VAC
ON voltage		80 VAC min.	
OFF voltage		25 VAC max.	
ON response time	100 VAC	50 or 70 ms max. (Use input filter settings to switch)	
	240 VAC	100 or 120 ms max. (Use input filter settings to switch)	
OFF response time	100 VAC	50 or 70 ms max. (Use input filter settings to switch)	
	240 VAC	100 or 120 ms max. (Use input filter settings to switch)	
Isolation method		Not isolated	Input terminals and internal signals: Photocoupler isolation

Units with DC Input

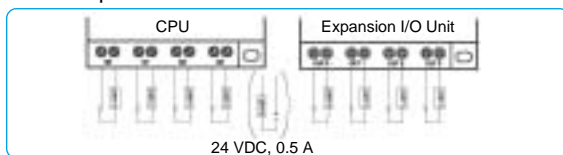


Input Specifications		CPU/Expansion I/O Unit
Input voltage		24 VDC +10%/-15%
Input impedance		CPU DC input: 4.8 kΩ; CPU shared AD input: 5.0 kΩ; Expansion I/O: 4.7 kΩ
Input current		5 mA typical
ON voltage		16.0 VDC min.
OFF voltage		5.0 VDC max.
ON response time		15 or 50 ms (Use input filter settings to switch)
OFF response time		15 or 50 ms max. (Use input filter settings to switch)

Analog Input Specifications (IN4 and IN5)

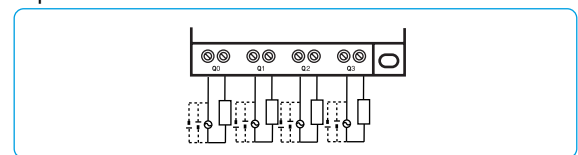
Input range	0 to 10 V
Input impedance	150 kΩ
Resolution	0.1 V (1/100 FS)
Overall precision (at -25 to 55°C)	10% FS
Analog-digital conversion monitor	0 to 10.5 V

Transistor Output



Item	Description
Maximum switching capacity	20.4 to 26.4 VDC, 500 mA
Leakage current	0.1 mA max.
Residual voltage	1.5 V max.
ON response time	1 ms max.
OFF response time	1 ms max.

Relay Output



Output Specifications	
Maximum switching capacity	8 A at 250 VAC (p.f. = 1), 5 A at 24 VDC
Minimum switching capacity	10 mA at 5 VDC
Relay life	Electrical: 50,000 operations Mechanical: 10 million operations
ON response time	15 ms max.
OFF response time	5 ms max.

General Specifications

Item	Specifications	
	LCD type: ZEN-10C1AR-A LED type: ZEN-10C2AR-A	LCD type: ZEN-10C1DR-D LCD type: ZEN-10C1DT-D LED type: ZEN-10C2DR-D LED type: ZEN-10C2DT-D
Power supply voltage	100 to 240 VAC, 50/60 Hz	24 VDC
Rated power supply voltage	85 to 264 VAC, 47/63 Hz	20.4 to 26.4 VDC
Power consumption	30 VA max.	6.5 W max.
Inrush current	40 A max.	20 A max.
Insulation resistance	20 MΩ (at 500 VDC) min. between power supply AC external terminals and all input terminals, and relay or transistor outputs	
Dielectric strength	2300 VAC, 50/60 Hz for 1 min. (leakage current 1 mA max.) between power supply AC external terminals and all input terminals, and relay or transistor outputs	
Noise immunity	Conforms to IEC61000-4-4, 2 KV (power supply line)	
Vibration resistance	Conforms to JIS C0040, 10 to 57 Hz, amplitude 0.075 mm, 57 to 1,500 Hz, acceleration: 9.8 m/s ² 80 minutes in X, Y, and Z directions (sweep time: 8 min. x 10 sweeps)	
Shock resistance	Conforms to JIS C0041. 147 m/s ² , 3 times in X, Y, and Z directions	
Ambient temperature	LCD-type (with LCD and operation buttons): 32 to 131°F LED-type (no LCD/operation buttons): -13 to 131°F	
Ambient humidity	10% to 90% (with no condensation)	
Ambient conditions	No corrosive gases	
Ambient storage temperature	LCD-type (with LCD and operation buttons): -4 to 167°F LED-type (no LCD/operation buttons): -40 to 167°F	
Certification	UL/CSA/CE	

Ordering Information

CPU and Expansion I/O Units

Name	Type	I/O	Power supply voltage	Inputs	Input voltage	Outputs	LCD & buttons	Calendar & clock	Analog input	Part number	
CPU	LCD	10	100 to 240 VAC	6	100 to 240 VAC	4	Relays	Yes	Yes	No	ZEN-10C1AR-A
	LED							No	No	No	ZEN-10C2AR-A
	LCD		24 VDC		24 VDC			Yes	Yes	Yes	ZEN-10C1DR-D
	LED							No	No	Yes	ZEN-10C2DR-D
	LCD		24 VDC		24 VDC			Yes	Yes	Yes	ZEN-10C1DT-D
	LED							No	No	Yes	ZEN-10C2DT-D
Expansion I/O	8	—	4	100 to 240 VAC	4	Relays	—	—	—	ZEN-8EAR	
			4	24 VDC	4	Relays	—	—	—	ZEN-8EDR	
	4	—	4	100 to 240 VAC	—	—	—	—	—	ZEN-4EA	
			4	24 VDC	—	—	—	—	—	—	ZEN-4ED
	8	—	4	—	4	Relays	—	—	—	ZEN-4ER	
			4	24 VDC	4	Transistor	—	—	—	ZEN-8EDT	

Optional Items

Name	Part number	Specifications	Remarks
Memory Cassette	ZEN-ME01	EEPROM	Enables programs and parameter settings to be saved or copied to another ZEN
Connecting Cable	ZEN-CIF01	2 m RS-232C (9-pin D-sub connector)	—
Battery Unit	ZEN-BAT01	10 year min. battery life (at 77°F)	Use to prevent loss of calendar, clock, holding bits, holding timer present values, counter present values, and other data when the power is turned OFF for an extended time (for 2 days or more at 77°F)
ZEN Support Software	ZEN-SOFT01-V2	Runs on Windows 95, 98, 2000, ME, NT 4.0	Specifically designed for the ZEN (CD-ROM)
ZEN Starter Kit	ZEN-STARTER01	—	Includes CPU (ZEN-10C1AR-A), programming cable (ZEN-CIF01), support software (ZEN-SOFT01-V2), manuals (W385 and W386), simulator switches (ZEN-ETL01)
ZEN Programmable Relays Operation Manual	W385	—	—
ZEN Support Software Operation Manual	W386	—	—

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Performance Specifications

Item	Specification
Control method	Stored program control
I/O control method	Cyclic scan
Programming language	Ladder diagram
Program capacity	96 lines (3 input conditions and 1 output per line)
Max. No. of control I/O points	34 points; CPU: 6 inputs and 4 outputs Expansion I/O Units: 4 inputs and 4 outputs each, up to 3 Units
LCD display	12 characters x 4 lines, with backlight (LCD-type CPU only)
Operation keys	8 (4 cursor keys and 4 operation keys) (LCD-type CPU only)
Memory backup	Internal EEPROM (or optional Memory Cassette) • User programs • Parameter settings Internal RAM, super-capacitor hold (or optional Battery Unit) • Holding bits • Holding timer and counter values Super capacitor hold (or optional Battery Unit) • Calendar and clock
Time function (RTC)	ZEN-10C1□ R-□ and ZEN-10C1DT-D, accuracy: 1 to 2 min/month (at 77°F)
Terminal block	Solid-line terminal block (Use solid lines or fine wiring terminals)
Power supply holding time	ZEN-10C□ AR-A: 10 ms min. ZEN-10C□ DR-D: 2 ms min. ZEN-10C□ DT-D: 2 ms min.
Weight	300 g max.

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