

## ZEN Programmable Relays



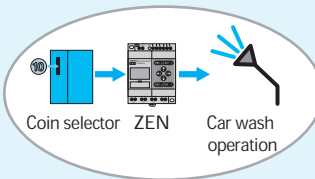
## Cost-Effective Alternative to Multiple Discrete Controls Simplifies Machine Operation and Maintenance

- »Advanced timing, counting and relay functions
  - »Simple programming
- »Reduced wiring, maintenance costs
  - »Password protection for security
- »Replaces up to 44 relay contacts and timers

# Just a few examples of what the ZEN can do: Enormous added value in automating everyday facilities

## ■ Fan and Pump Control

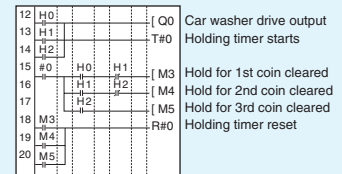
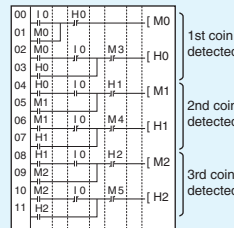
### Coin-operated Car Wash



The ZEN can be used to change the operating time depending on the number of coins inserted. If a holding timer (#) is used with holding bits (H) in self-holding programming, the remaining time will not be reset even if there are unexpected power interruptions.

#### Application of Bit Logic and Timer Functions

##### ■ Example Program



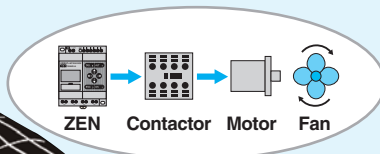
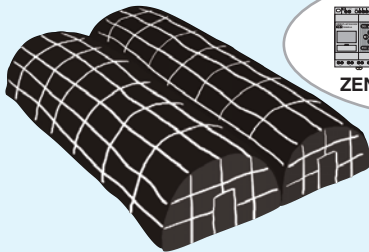
The car wash operates for 3 minutes for one coin, 6 minutes for two coins, and 9 minutes for 3 coins.

##### ■ Parameter Settings

Holding Timer #0				
#	X	M	S	A
TRG				
RES	0	3	00	

Set to 3 min.

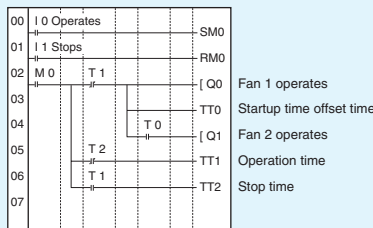
### Greenhouse Air Circulator Control



The ZEN can be used to circulate carbon dioxide or warm air. Two circulation fans can be operated at regular intervals. Startup current can also be reduced by staggering operation of the two fans.

#### Application of Bit Logic and Timer Functions

##### ■ Example Program



When the operation switch is pressed, fan 1 starts and 30 seconds later fan 2 starts. The fans repeat a cycle of 1 hour operating, 1 hour 30 minutes stopped.

##### ■ Parameter Settings

Time Offset Startup Time Setting T0

T0	X	S	A
TRO			
RES	3	0	00

Set to 30 s.

Time Offset Startup Time Setting T1

T1	X	H	S	A
TRG				
RES	0	1	00	

Set to 1 h.

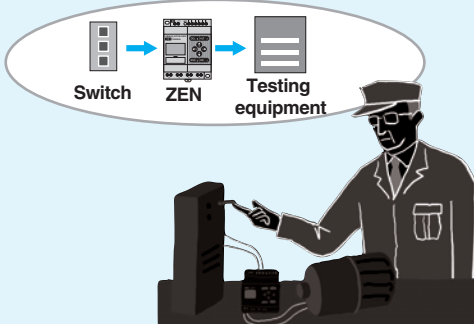
Time Offset Startup Time Setting T2

T2	X	H	S	A
TRG				
RES	0	1	30	

Set to 1 hour 30 min.

## ■ Research and Development Devices

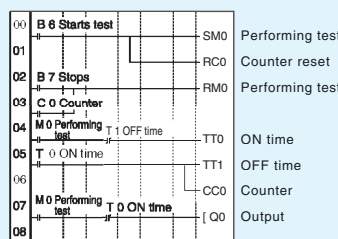
### Testing Equipment



ON/OFF switching can be performed for durability and other tests in R&D.

#### Application of Bit Logic, Timer Functions, and Counter Functions

##### ■ Example Program



When the operation switch is pressed, the device repeats a sequence of 2-minutes-ON, 3-minutes-OFF for a total of 100 times before automatically stopping.

##### ■ Parameter Settings

T0, Output ON Time

T0	X	M	S	A
TGS				
RES	0	2	00	

Set to 2 minutes.

T1, Output OFF Time

T1	X	M	S	A
TRG				
RES	0	3	00	

Set to 3 minutes.

C0, Number of Times Output Turns ON

C0	CNT	RES	DIR	A
			0	100

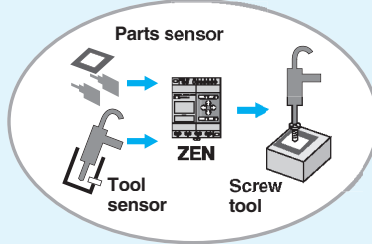
Set to 100 times.

Easier small-scale automatic control. That is what the ZEN from OMRON provides. The ZEN can be used almost as easily as wiring materials. The ZEN enables quick automation of small machines or facilities. Add to this the LCD screen and 8 buttons on the front panel for easy ladder program input. You want a more compact control panel or

reduced assembly or wiring? AC inputs, easier circuit design, or multiple-timer control? The OMRON ZEN gives you these, and more, to fill all your automation requirements. Increase system convenience and added value using the automation excellence provided by the ZEN.

## Factories (Jigs, Operator Error Prevention, Small Equipment)

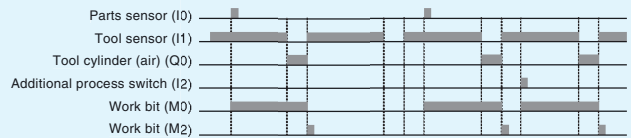
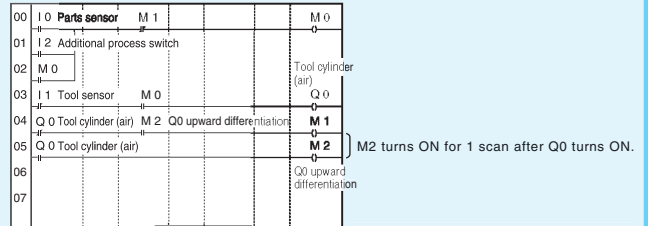
### Preventing Assembly Omissions and Other Mistakes



If the part required for assembly does not pass through the sensor, the screw tool will not be supplied with air to prevent mistakes.

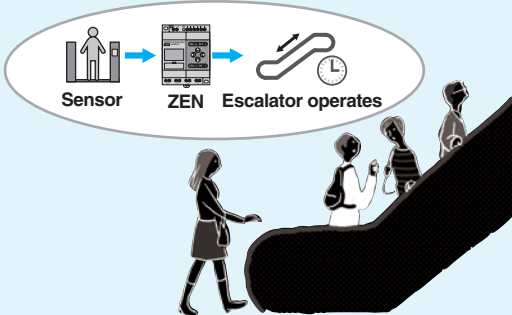
### Application of Bit Logic and Timer Functions

#### Example Program



## Energy Conservation and Automation of Building Facilities

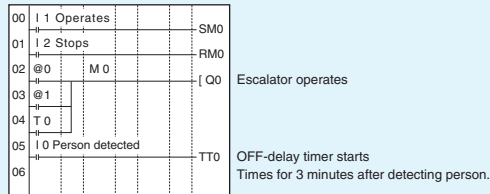
### Automatic Escalator



An escalator can operate continuously between specified days and times. It can also be set to conserve energy by operating outside those times only when a person approaches the escalator.

### Application of Bit Logic, Timer Functions, and Weekly Timers

#### Example Program



Two weekly timers are used to operate the escalator between 7:00 and 10:00 am and 5:00 and 10:00 pm on weekdays. Outside those times, the escalator uses the OFF-delay timer to operate for 3 minutes after a person has been detected.

#### Parameter Settings

Weekly Timer @0  
(Mon to Fri: 7:00 to 10:00)

@0	MD - FR A
ON	0 7 : 0 0
RES OFF	1 0 : 0 0

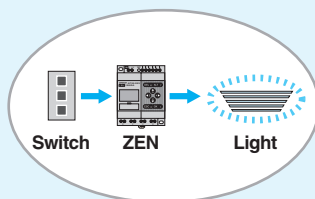
Weekly Timer @1  
(Mon to Fri: 17:00 to 22:00)

@1	MO - FR A
ON	1 7 : 0 0
RES OFF	2 2 : 0 0

OFF-delay Timer T0

T0	M : S A
TRG	0 3 . 0 0
RES	

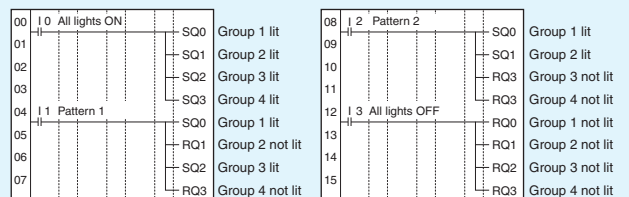
### Lighting Pattern Control



Set the required light patterns and change between patterns with the flick of a switch to save energy by improving lighting efficiency.

### Application of Bit Logic

#### Example Program



Switch 1 (I0) turned ON, all lights turn ON.  
Switch 2 (I1) turned ON, light groups 1 and 3 turn ON.  
Switch 3 (I2) turned ON, light groups 1 and 2 turn ON.  
Switch 4 (I3) turned ON, all lights turn OFF.

# OMRON

**Omron's Easy-To-Use Programmable Relay  
Offers Precision and Space Savings for  
Small Scale Control Applications**

## ZEN

**Smart. Simple. Small.**

The ideal solution for managing a wide range of simple applications, including automatic lighting, access control, conveyor positioning, pump control, testing equipment, watering systems, or ventilation systems.



### ZEN Starter Kits – Great introduction to the power and simplicity of the ZEN Series

Includes everything for self-training, system design, and installation:

- 10 I/O CPU
- PC programming cable (RS-232 to ZEN)
- Support software
- Manuals
- Simulator switches



ZEN-STARTER01-V2	AC I/O Kit with ZEN-10CIAR-A-V2	\$193.00
ZEN-STARTER02-V2	DC I/O Kit with ZEN-10CIAR-D-V2	\$193.00

### System Advantages

- Delivers the flexibility and functionality of separate timers, counters, and relays for control applications with up to 44 I/O.
- New economy CPU models – perfect for applications that require less than 10 or 20 points of I/O. (Does not accept expansion units).
- Save time by using the memory cassette to transfer programs between ZEN units and standardize updates to end users.
- Reduce wiring and engineering time using simple ladder logic program with the push of a button or click of the mouse.
- Easily add up to 3 ultra-slim 35mm, 8 I/O expansion units when more points of control are required.

### System Features

- Accurate analog inputs  $\pm 1.5\%$  FS.
- Wide supply voltage range of 10.8 to 28.8 VDC.
- Flexible mounting – either horizontal or vertical.
- New CPUs with built-in RS-485 communications for data sharing.
- Advanced high-value counting with 8-digit counter and 8-digit comparat in addition to 16 standard counters.
- One 150-Hz high-speed counter available on models with DC power supp
- Twin-timer operation allows you to set ON and OFF times separately, greatly simplifying intermittent operation.
- Password function ensures security.
- Display user-set messages or analog-converted values.

### ZEN Support Software


- Easily write ladder programs, monitor programs online, set parameters, print, and save files in the Windows® environment.
- Offers simulation capability to simplify program debugging; allows programs to be simulated on a personal computer without connecting to ZEN.

ZEN PROGRAMMABLE RELAY




Smart. Simple. Small.

### 10-Point CPU Programmable Relay Units


Appearance	Description	Inputs / Power Supply	Outputs	Analog Input / Comparators	8-digit Counter / Comparators	Model Number	List Price
 90 H x 70 W x 56 D mm	10 I/O CPU Expandable up to 34 I/O	6 100 to 240 VAC 12 to 24 VDC	4 Relays	-	Yes / 4	ZEN-10C1AR-A-V2	\$115.00
				2 Ch. 0 - 10V / 4	Yes / 4	ZEN-10C1DR-D-V2	\$115.00
	10 I/O CPU Economy model (non-expandable)	100 to 240 VAC 12 to 24 VDC	Relays	2 Ch. 0 - 10V / 4	Yes / 4	ZEN-10C1DT-D-V2	\$115.00
				-	Yes / 4	ZEN-10C3AR-A-V2	\$90.00
	9 I/O CPU with RS-485 Communications Expandable up to 33 I/O	100 to 240 VAC 12 to 24 VDC	3	2 Ch. 0 - 10V / 4	Yes / 4	ZEN-10C3DR-D-V2	\$90.00
				-	Yes / 4	ZEN-10C4AR-A-V2	\$185.00
			2 Ch. 0 - 10V / 4	Yes / 4	ZEN-10C4DR-D-V2	\$185.00	

### 20-Point CPU Programmable Relay Units





Appearance	Description	Inputs / Power Supply	Outputs	Analog Input / Comparators	8-digit Counter / Comparators	Model Number	List Price
 90 H x 122.5 W x 56 D mm	20 I/O CPU Expandable up to 44 I/O	12 100 to 240 VAC 12 to 24 VDC	8 Relays	-	Yes / 4	ZEN-20C1AR-A-V2	\$155.00
				2 Ch. 0 - 10V / 4	Yes / 4	ZEN-20C1DR-D-V2	\$155.00
	20 I/O CPU Economy model (non-expandable)	100 to 240 VAC 12 to 24 VDC	Relays	2 Ch. 0 - 10V / 4	Yes / 4	ZEN-20C1DT-D-V2	\$155.00
				-	Yes / 4	ZEN-20C3AR-A-V2	\$130.00
				2 Ch. 0 - 10V / 4	Yes / 4	ZEN-20C3DR-D-V2	\$130.00

10 and 20 I/O models available without display. Please refer to datasheet for more information.

### I/O Expansion Units

Appearance	Description	Inputs / Power Supply	Outputs	Model Number	List Price
 90 H x 35 W x 56 D mm	8 I/O Expansion units	4 100 to 240 VAC 12 to 24 VDC	4 Relays	ZEN-8E1AR	\$69.52
				ZEN-8E1DR	\$69.52
			Transistors	ZEN-8E1DT	\$69.52

### ZEN Accessories

Appearance	Description	Model Number	List Price
	ZEN Support Software	ZEN-SOFT01V4	\$40.00
	ZEN Programming Cable – Serial to ZEN (2m)	ZEN-CIF01	\$80.08
	Memory Cassette EEPROM – Copies program to multiple units	ZEN-ME01	\$31.25
	ZEN Battery – Use with controller CPU to provide 10 years of memory protection to prevent data loss in the event of an extended power outage (45 H x 17.5 W x 44 D mm)	ZEN-BAT01	\$37.33



**OMRON ELECTRONICS LLC • THE AMERICAS HEADQUARTERS**

Schaumburg, IL USA • 847.843.7900 • 800.556.6766 • [www.omron247.com](http://www.omron247.com)

**OMRON CANADA, INC. • HEAD OFFICE**

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • [www.omron.ca](http://www.omron.ca)

**OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE**

São Paulo, SP, Brasil • 55.11.2101.6300 • [www.omron.com.br](http://www.omron.com.br)

**OMRON ELECTRONICS MEXICO SA DE CV • HEAD OFFICE**

Apodaca, N.L. • 52.811.156.99.10 • 001.800.556.6766 • [mela@omron.com](mailto:mela@omron.com)

**OMRON ARGENTINA • SALES OFFICE**

Cono Sur • 54.11.4783.5300

**OMRON CHILE • SALES OFFICE**

Santiago 56.9.9917.3920

**OTHER OMRON LATIN AMERICA SALES**

54.11.4783.5300