

### Description

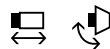
The Z/T235 Series limit switches are designed for use with movable machine guards/access gates which must be closed for operator safety ... and for any other presence/position sensing application normally addressed with conventional limit switches. Their positive-opening NC contacts provide a higher level of safety and reliability than conventional spring-driven switches whose contacts can weld or stick shut.

Each is available with a choice of six standard actuators ... rounded plunger, roller plunger, roller rocking lever, rod rocking lever, adjustable roller rocking lever and one-way roller lever ... mountable in any one of four 90° positions. All rocking levers are positively-locked to the shaft, and are adjustable throughout 360° in 10° increments.

Units are available with a choice of slow-action or snap-action contacts.

Their rugged metal housing and IP67 rating make them ideal alternatives to conventional limit switches.

### Typical Applications



The Z/T235 Series may be used in any presence/position sensing application normally addressed with conventional limit switches. Snap-action models with positive-break NC contacts (Z235 Series) are approved for use in safety systems. For safety applications the switch must be mounted such that the actuating element of the machine displaces the switch actuator far enough to exceed the positive-break point. (See contact function diagrams: symbol \*).

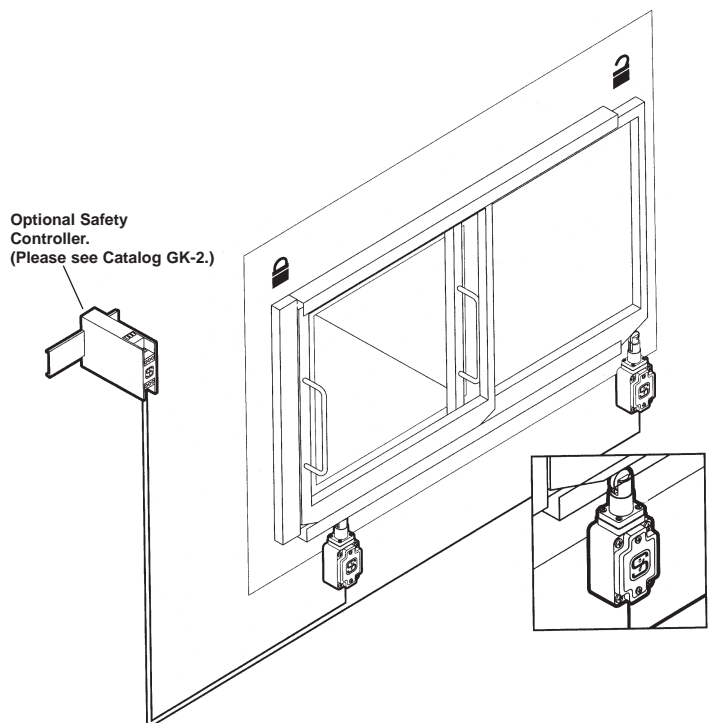
### Features & Benefits

- “Positive-Break” NC contacts ... won’t stick or weld shut.
- Watertight design ... meets IP67 washdown requirements.
- Rugged, corrosion-resistant housing ... tolerates hostile environments.
- Six popular actuator styles ... for application versatility.
- Four 90° actuator mounting positions ... provide installation flexibility.
- Slow or snap-action operation ... choose to best satisfy application requirements.
- Safety-system approved (Z235 Series) ... for use in machine guarding applications.
- Meets rigid safety agency standards ... IEC, BG, VDE, UL and CSA.

### ORDERING GUIDE

FOR FEATURE:	SPECIFY:
1. Contact operation: Slow Action Snap Action	T Z
2. Operating head	V
3. Roller lever	12 H
4. Body size	235-
5. No. of NO contacts	1
6. No. of NC contacts	1
7. Degree of protection IP 67	z
8. Sealing of operating head (optional)	z*
	Example 1: TV12 H 235-11z
	Example 2: ZV 12 H 235-11z

\*Available on rocking lever actuator style only.



# Z/T235 TECHNICAL DATA

## MECHANICAL SPECIFICATIONS

<b>Housing</b>	Chromated diecast zinc with brown enamel finish
<b>Operating Temperature</b>	-22°F to +175°F (-30°C to +80°C)
<b>Mechanical Life</b>	20 million operations
<b>Minimum Cam Speed (Referenced to Plunger)</b>	Z235 Series: 0.04m./minute T235 Series: 2.4m./minute
<b>Maximum Operating Rate</b>	5000 operations/hour
<b>Bounce Time</b>	Z235 Series: £ 3 ms T235 Series: Function of cam speed
<b>Changeover Time</b>	Z235 Series: £ 5 ms for minimum cam speed T235 Series: Function of cam speed
<b>Degree of Protection</b>	IP67
<b>Conformity to Standards</b>	IEC 947-5-1 EN 60947-5-1 DIN VDE 0660 Part 200 BG-GS-ET15 DIN EN 50 047 CSA-C22.2 UL508

## ELECTRICAL SPECIFICATIONS

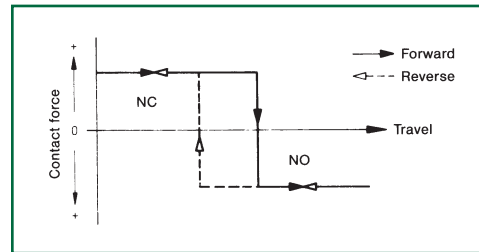
<b>Contacts</b>	Fine silver
<b>Contact Configuration</b>	Double-pole, double-break with electrically-separated contact bridges
<b>Contact Gap</b>	Z235 Series: 2x0.08 inches (2x2mm) T235 Series: 2x0.14 inches (2x3.5mm)
<b>Contact Rating</b>	4A/230VAC 2.5A/400VAC
<b>Switching Action</b>	Snap-action, positive-break NC contacts (Z235) Slow-action, positive-break NC contacts (T235)
<b>Short Circuit Protection</b>	Fuse: 10A (time delay) 2.5A (no time delay) 6A (time delay) as positive-break position switch
<b>Rated Insulation Voltage</b>	500VAC
<b>Rated Impulse Withstand Voltage</b>	6kV
<b>Type Terminals</b>	Screw terminals, maximum 2.5mm (AWG13) wire



Series T235  
Slow-action  
switch

Series Z235  
Snap-action  
switch

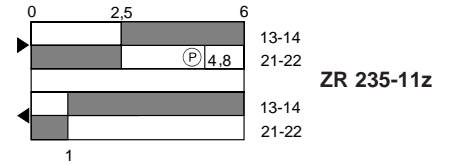
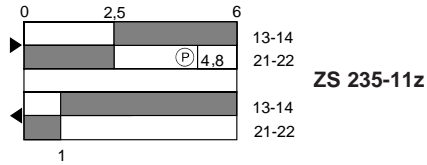
## CONTACT SYSTEMS



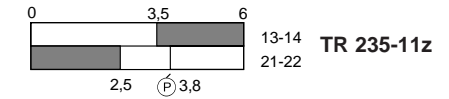
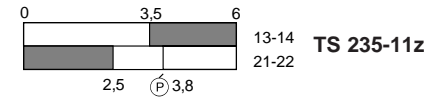
# Z/T235 TECHNICAL DATA

## Contact function diagrams

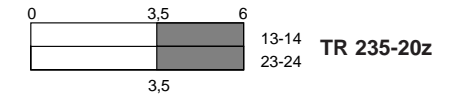
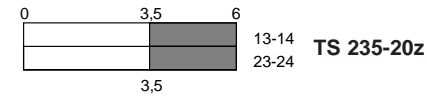
Snap action positive break  
1 NO + 1 NC



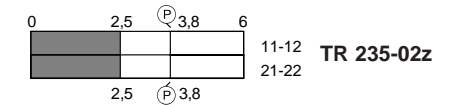
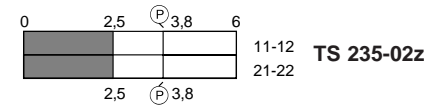
Slow action  
1 NO + 1 NC (break before make)



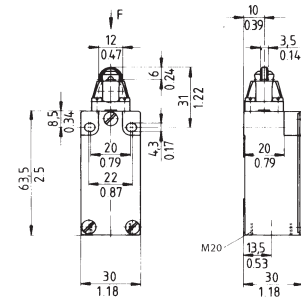
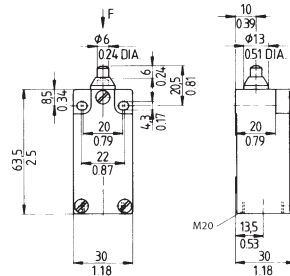
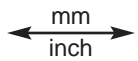
2 NO (simultaneous)



2 NC (simultaneous)



## Dimensions



## Types of Actuators

### Rounded plunger Style S

### Roller plunger Style R

Actuating force/torque

9 N (19 N positive break)

9 N (19 N positive break)

Actuating speed Z/T at  $\nabla$

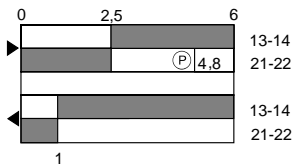
0°: min. 10/60 mm/min, max. 1 m/s

30°: min. 20/120 mm/min, max. 1 m/s

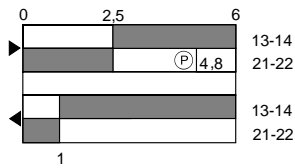
Part No.	Actuator Type	Model	Model
13-14 21-22	Snap Action positive break	<b>ZS 235-11z</b>	<b>ZR 235-11z</b>
13-14 21-22	Slow action	<b>TS 235-11z</b>	<b>TR 235-11z</b>
13-14 23-24	Slow action	<b>TS 235-20z*</b>	<b>TR 235-20z*</b>
11-12 21-22	Slow action	<b>TS 235-02z</b>	<b>TR 235-02z</b>

\* Not for use in safety applications

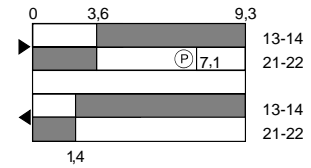
# Z/T235 TECHNICAL DATA



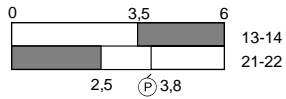
**Z4S 235-11z**



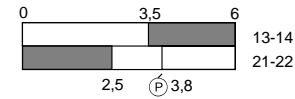
**Z4R 235-11z**



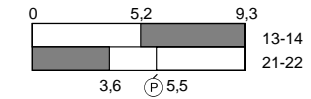
**ZK 235-11z**



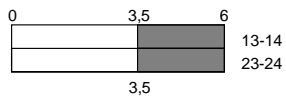
**T4S 235-11z**



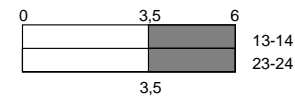
**T4R 235-11z**



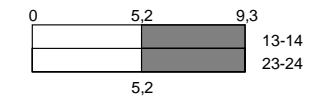
**TK 235-11z**



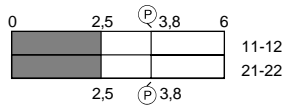
**T4S 235-20z**



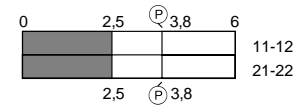
**T4R 235-20z**



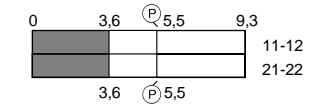
**TK 235-20z**



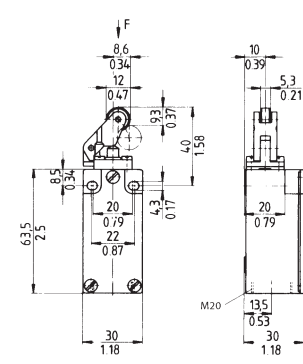
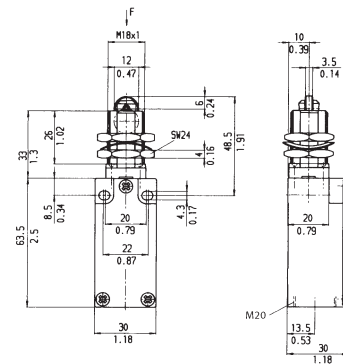
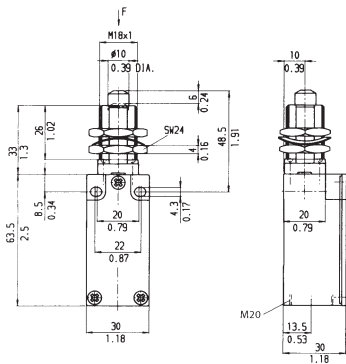
**T4S 235-02z**



**T4R 235-02z**



**TK 235-02z**



**Rounded plunger (central mounting) Style 4S**

**Top roller plunger (central mounting) Style 4R**

**One-way roller lever Style K**

9 N (19 N positive break)

9 N (19 N positive break)

8 N (18 N positive break)

0°: min. 10/60 mm/min, max. 1 m/s

30°: min. 20/120 mm/min, max. 1 m/s

30°: min. 24/240 mm/min, max. 1 m/s

**Z4S 235-11z**

**Z4R 235-11z**

**ZK 235-11z**

**T4S 235-11z**

**T4R 235-11z**

**TK 235-11z**

**T4S 235-20z\***

**T4R 235-20z\***

**TK 235-20z\***

**T4S 235-02z**

**T4R 235-02z**

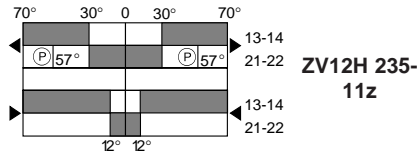
**TK 235-02z**

\* Not for use in safety applications

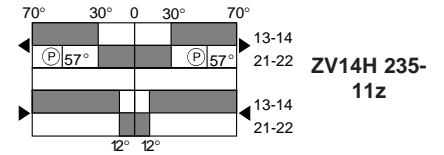
# Z/T235 TECHNICAL DATA

## Contact function diagrams

Snap action positive break  
1 NO + 1 NC

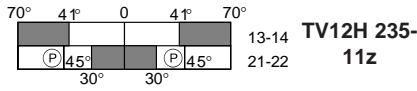


**ZV12H 235-11z**

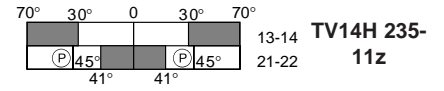


**ZV14H 235-11z**

Slow action  
1 NO + 1 NC (break before make)

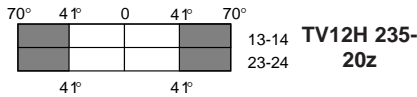


**TV12H 235-11z**

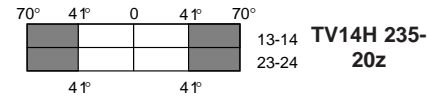


**TV14H 235-11z**

2 NO (simultaneous)

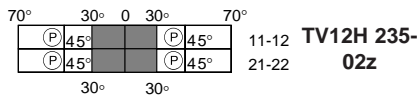


**TV12H 235-20z**

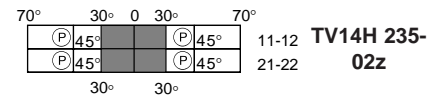


**TV14H 235-20z**

2 NC (simultaneous)



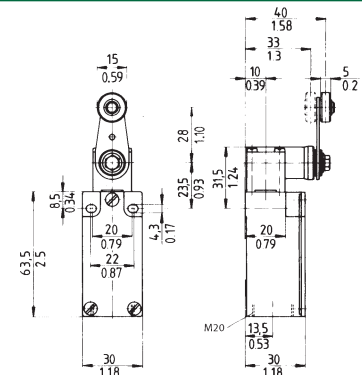
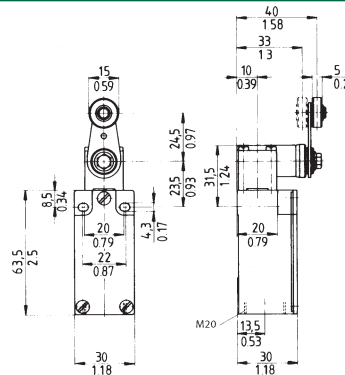
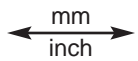
**TV12H 235-02z**



**TV14H 235-02z**



Dimensions



## Types of Actuators

### Roller rocking lever Style 12H

### Roller rocking lever Style 14H

Actuating force/torque

15 Ncm (18.5 Ncm positive break)

15 Ncm (18.5 Ncm positive break)

Actuating speed Z/T at  $\nabla$

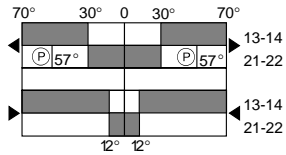
30°: min. 687/4122 mm/min, max. 1 m/s

30°: min. 687/4122 mm/min, max. 1 m/s

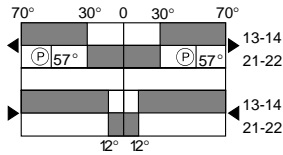
Part No.	Actuator Type	Style 12H	Style 14H
13-14 21-22	Snap Action positive break	<b>ZV12H 235-11z</b>	<b>ZV14H 235-11z</b>
13-14 21-22	Slow action	<b>TV12H 235-11z</b>	<b>TV14H 235-11z</b>
13-14 23-24	Slow action	<b>TV12H 235-20z*</b>	<b>TV14H 235-20z*</b>
11-12 21-22	Slow action	<b>TV12H 235-02z</b>	<b>TV14H 235-02z</b>

\* Not for use in safety applications

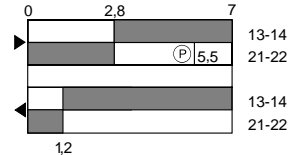
# Z/T235 TECHNICAL DATA



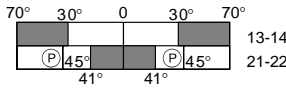
**ZV7H 235-11z**



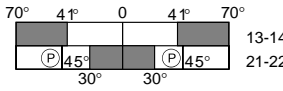
**ZV10H 235-11z**



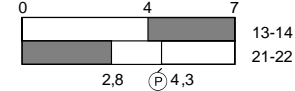
**Z3K 235-11z**



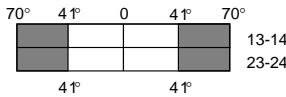
**TV7H 235-11z**



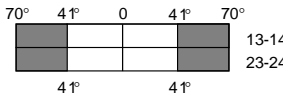
**TV10H 235-11z**



**T3K 235-11z**



**TV7H 235-20z**



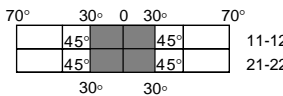
**TV10H 235-20z**



**T3K 235-20z**



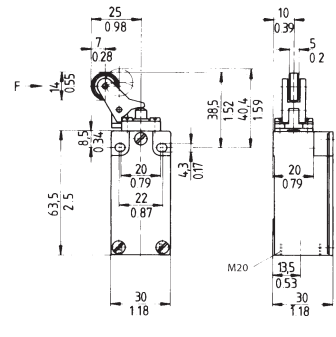
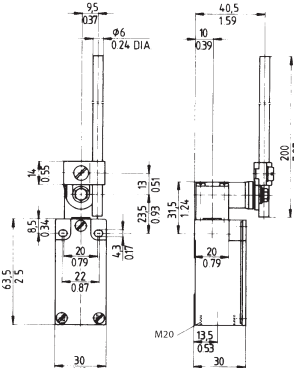
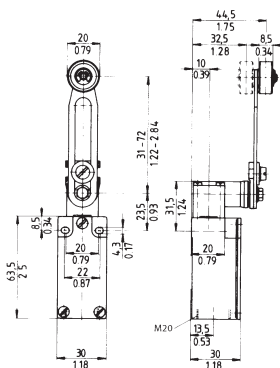
**TV7H 235-02z**



**TV10H 235-02z**



**T3K 235-02z**



**Adjustable roller rocking lever\*  
Style 7H**

**Rod rocking lever\*  
Style 10H**

**One-way roller lever  
Style 3K**

15 Ncm (18.5 Ncm positive break)

15 Ncm (18.5 Ncm positive break)

9 N (19 N positive break)

30°: min. 240/1440 mm/min, max. 1 m/s

30°: min. 687/4122 mm/min, max. 1 m/s

30°: min. 27/160 mm/min, max. 1 m/s

**ZV7H 235-11z\***

**ZV10H 235-11z\***

**Z3K 235-11z**

**TV7H 235-11z\***

**TV10H 235-11z\***

**T3K 235-11z**

**TV7H 235-20z\***

**TV10H 235-20z\***

**T3K 235-20z\***

**TV7H 235-02z\***

**TV10H 235-02z\***

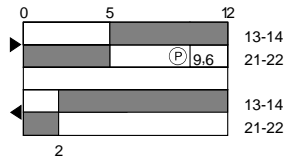
**T3K 235-02z**

\* Not for use in safety applications

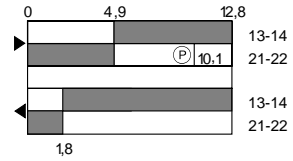
# Z/T235 TECHNICAL DATA

## Contact function diagrams

Snap action positive break  
1 NO + 1 NC

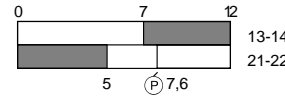


**Z4K 235-11z**

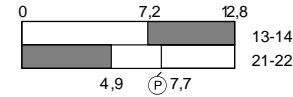


**ZK4 235-11z**

Slow action  
1 NO + 1 NC (break before make)

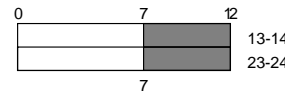


**T4K 235-11z**

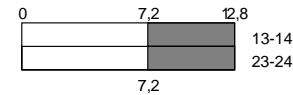


**TK4 235-11z**

2 NO (simultaneous)

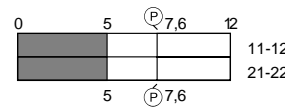


**T4K 235-20z**



**TK4 235-20z**

2 NC (simultaneous)



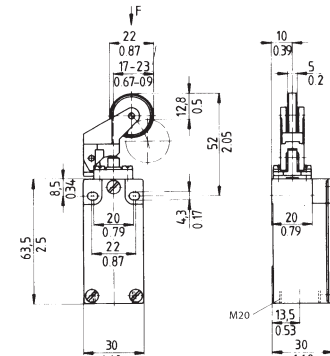
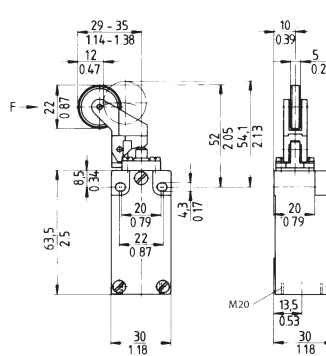
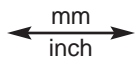
**T4K 235-02z**



**TK4 235-02z**



Dimensions



## Types of Actuators

One-way roller lever  
Style 4K

One-way roller lever  
Style K4

Actuating force/torque

6 N (16 N positive break)

6 N (16 N positive break)

Actuating speed Z/T at  $\nabla$

30°: min. 44/264 mm/min, max. 1 m/s

30°: min. 56/336 mm/min, max. 1 m/s

Part No.	Actuator Type	Style 4K	Style K4
13-14 21-22	Snap Action positive break	Z4K 235-11z	ZK4 235-11z
13-14 21-22	Slow action	T4K 235-11z	TK4 235-11z
13-14 23-24	Slow action	T4K 235-20z*	TK4 235-20z*
11-12 21-22	Slow action	T4K 235-02z	TK4 235-02z

\*Not for use in safety applications.