

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** ... models with positive-break contacts approved for use in machine guarding applications.
- **Meets rigid safety agency standards** ... IEC, BG, VDE, UL and CSA.

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.

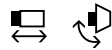
Their rugged metal housing and IP67 rating make them ideal alternatives to conventional limit switches.

ORDERING GUIDE

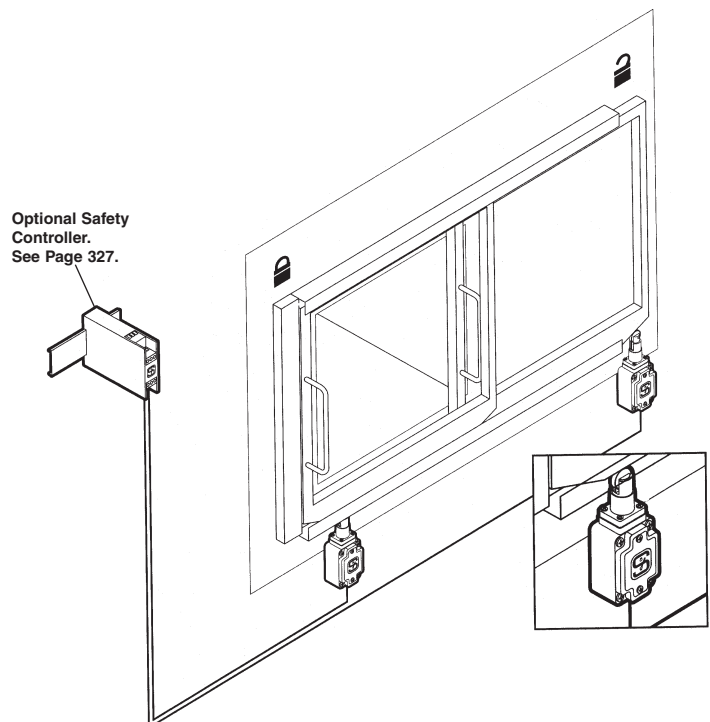
FOR FEATURE:	SPECIFY:
1. Contact operation: Slow Action Snap Action	T Z
2. Operating head	V
3. Roller lever	12 H
4. Body size	235-
5. No. of NO contacts	1
6. No. of NC contacts	1
7. Degree of protection IP 67	z
8. Sealing of operating head (optional)	z*
Example 1:	TV12 H 235-11z
Example 2:	ZV 12 H 235-11z

*Available on rocking lever actuator style only.

Typical Applications



The Z/T235 Series may be used in any presence/position sensing application normally addressed with conventional limit switches. Models with positive-break NC contacts 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 *).



Z/T235 TECHNICAL DATA

MECHANICAL SPECIFICATIONS

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



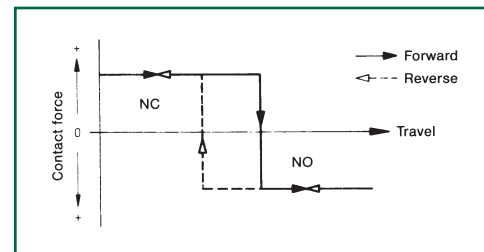
Series T235
Slow-action
switch

Series Z235
Snap-action
switch

ELECTRICAL SPECIFICATIONS

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

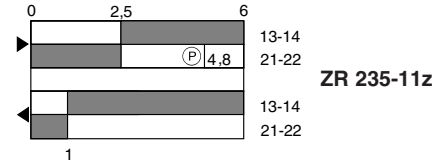
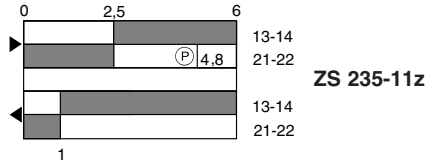
CONTACT SYSTEMS



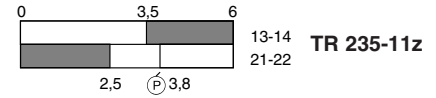
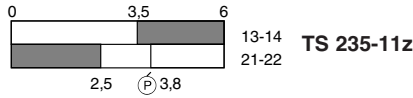
Z/T235 TECHNICAL DATA

Contact function diagrams

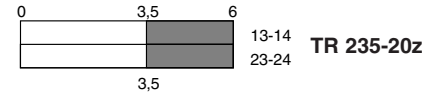
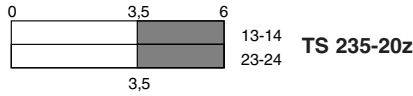
Snap action positive break
1 NO + 1 NC



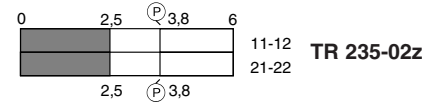
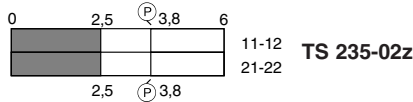
Slow action
1 NO + 1 NC (break before make)



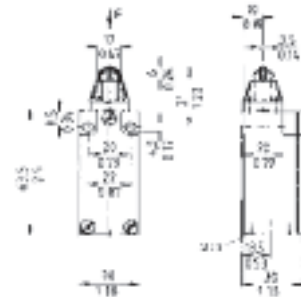
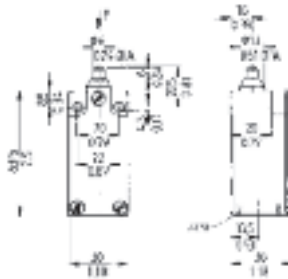
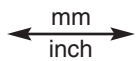
2 NO (simultaneous)



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)

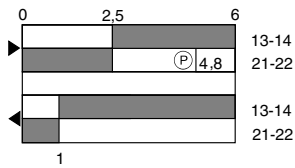
Actuating speed Z/T at \angle

0°: min. 10/60 mm/min, max. 1 m/s

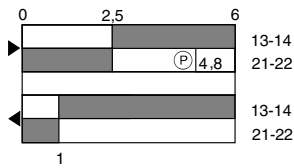
30°: min. 20/120 mm/min, max. 1 m/s

Part No.	Symbol	Function	Style S	Style R
		Snap Action positive break	ZS 235-11z	ZR 235-11z
		Slow action	TS 235-11z	TR 235-11z
		Slow action	TS 235-20z*	TR 235-20z*
		Slow action	TS 235-02z	TR 235-02z

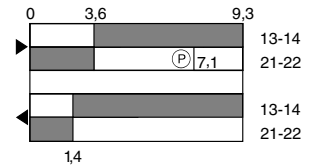
Z/T235 TECHNICAL DATA



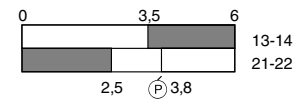
Z4S 235-11z



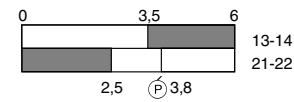
Z4R 235-11z



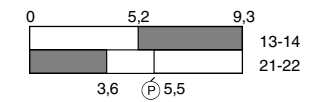
ZK 235-11z



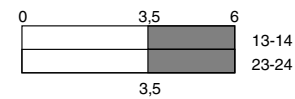
T4S 235-11z



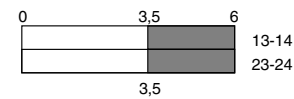
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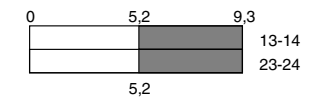
TK 235-11z



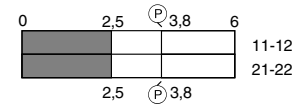
T4S 235-20z



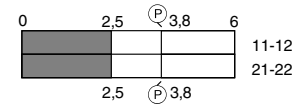
T4R 235-20z



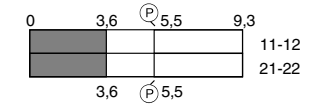
TK 235-20z



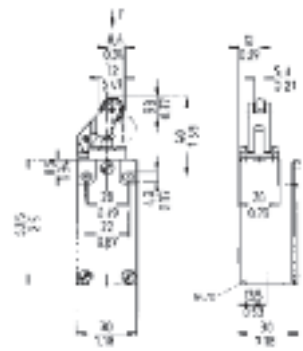
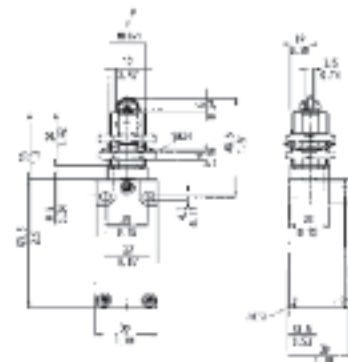
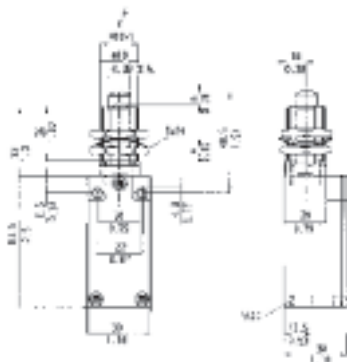
T4S 235-02z



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

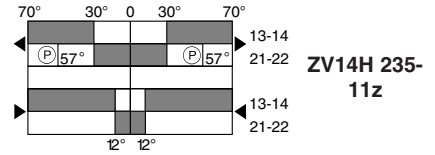
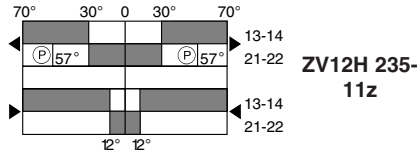
* Not for use in safety applications

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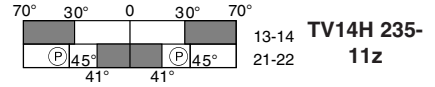
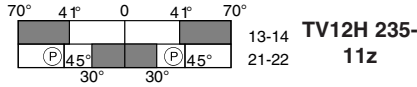
Z/T235 TECHNICAL DATA

Contact function diagrams

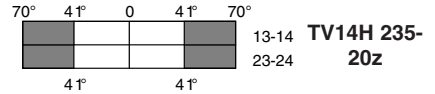
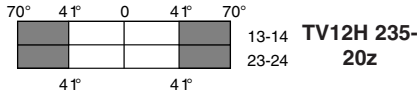
Snap action positive break
1 NO + 1 NC



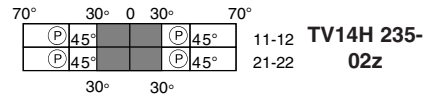
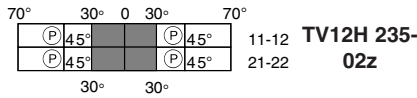
Slow action
1 NO + 1 NC (break before make)



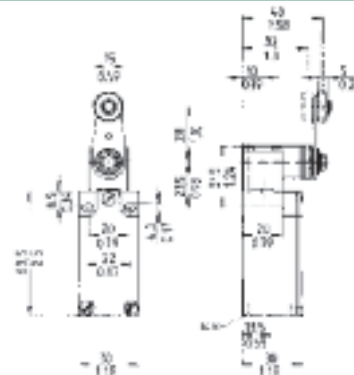
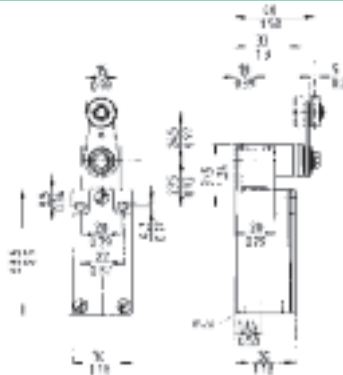
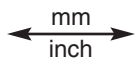
2 NO (simultaneous)



2 NC (simultaneous)



Dimensions



Types of Actuators

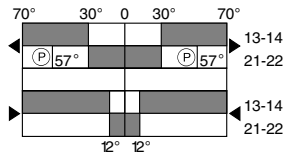
Roller rocking lever
Style 12H

Roller rocking lever
Style 14H

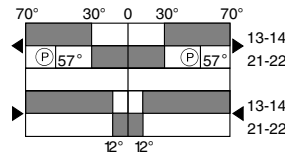
Actuating force/-torque	15 Ncm (18.5 Ncm positive break)	15 Ncm (18.5 Ncm positive break)
Actuating speed Z/T at ∇	30°: min. 687/4122 mm/min, max. 1 m/s	30°: min. 687/4122 mm/min, max. 1 m/s

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

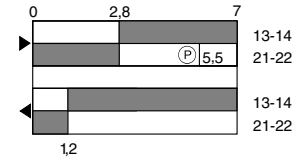
Z/T235 TECHNICAL DATA



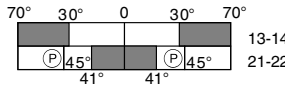
ZV7H 235-11z



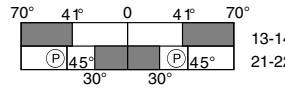
ZV10H 235-11z



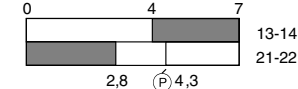
Z3K 235-11z



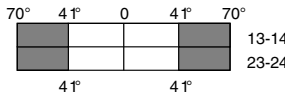
TV7H 235-11z



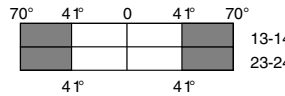
TV10H 235-11z



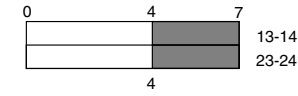
T3K 235-11z



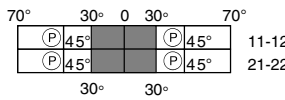
TV7H 235-20z



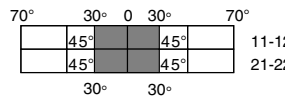
TV10H 235-20z



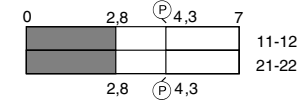
T3K 235-20z



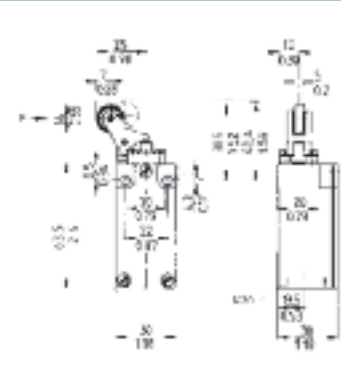
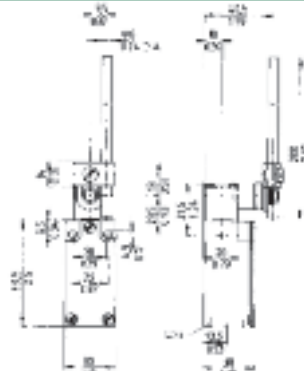
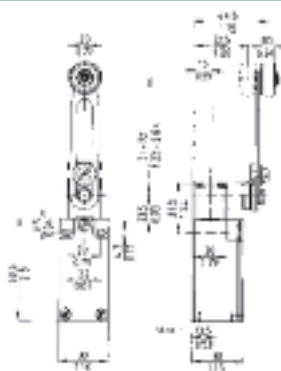
TV7H 235-02z



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



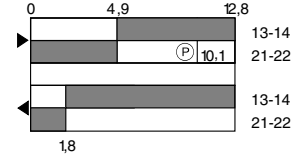
Z/T235 TECHNICAL DATA

Contact function diagrams

Snap action positive break
1 NO + 1 NC

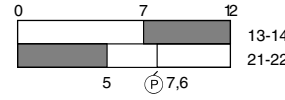


Z4K 235-11z

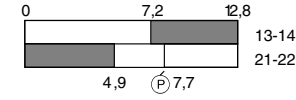


ZK4 235-11z

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

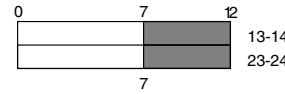


T4K 235-11z

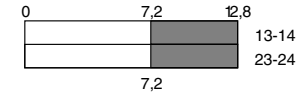


TK4 235-11z

2 NO (simultaneous)

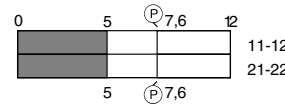


T4K 235-20z

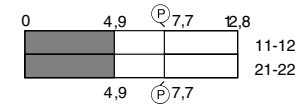


TK4 235-20z

2 NC (simultaneous)



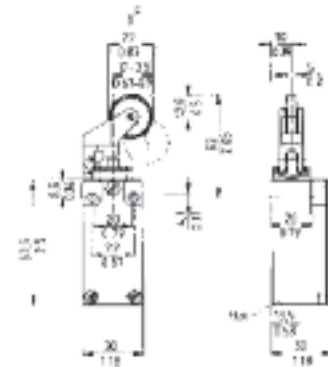
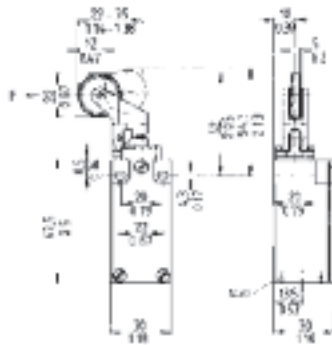
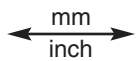
T4K 235-02z



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 ∇

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