ZLS Series Global Limit Switches

Honeywell

GENERAL INFORMATION

ZLS series limit switches are specifically designed for world-wide applications and is supported by Honeywell global resources for sales and after sales service.

ZLS series limit switches are designed to the latest IEC standard are available and include a wide range of EN50041 and EN50047 type switches. Miniature EN50047 limit switches are available in metal and double insulated enclosures and a metal enclosed 3-cable entry version (EN50047 mounting compatible) is also offered.

Standard ZLS switch circuit variations include 2 and 3-circuit versions with forced disconnect mechanism. ZLS includes features to make quick installation easier and safer.

Customers will benefit from Honeywell's vast experience in serving world industries over many years.

Most ZLS versions are interchangeable with almost all other makes of EN50041/47 switches.

TYPICAL APPLICATIONS

☐ Machine tools: metal fabrication equipment, presses, transfer lines and special machinery

☐ Material handling equipment: conveyors, elevators, cranes and hoists

☐ Packaging machinery and process equipment

☐ Textile machinery

☐ Construction machinery and equipment, vehicles and lift trucks

FEATURES

☐ Designed to the new IEC standard for world-wide applications

☐ Positive opening of normal closed contact meets IEC947-5-1-3 safety standard.

☐ UL, CSA, and CE

☐ Sealing up to IP/65/ IP 67

☐ International conduit sizes

☐ Design for ease of installation

☐ Eleven basic switch versions, Wide choice of actuators

STANDARDS

IEC 947-1 explains the general rules relating to Low-voltage switchgear and controlgear. The purpose of this standard is to harmonize as much as possible the product performance and test requirements for equipment where the rated voltage does not exceed 1,000 VAC or 1,500 VDC.

IEC 947-5-1 is part 5 of the general rules which relates to Controlcircuit devices and switching elements. Also within this part there is a section which considers Special Requirements For Control Switches With Positive Opening Operation. Any control switch which has this positive opening operation and conforms to these special requirements will be marked on the outside of the product with this symbol:

The Contact Element Form defines the configuration of the contacts and the number of contacts within the switch. e.g.

Form Za – both contact elements have the same polarity.

Form Zb – the two contact elements are electrically separated.

The Utilization Category defines the type of current carried (AC) Alternating current, (DC) Direct current and the typical application in which the switch is used e.g.

AC15 – Control of Electromagnetic Loads (less than 72VA)

DC13 – Control of electromagnets.

The contact rating Designation relates to the utilization categories and defines the conventional thermal current Ith (A), rated operational current Ie (A) at rated operational voltages Ue and the VA rating e.g.

A600 – The "A" denotes the maximum VA rating (AC) and the "600" denotes the maximum rated (AC) voltage.

Q300 – The "Q" denotes the maximum VA rating (DC) and the "300" denotes the maximum rated (DC) voltage.

These IEC standards have been adopted by CENELEC (The European Commitee for Electrotechnical Standardization) and have been identified by replacing IEC with EN 60 e.g.

IEC 947-5-1 then becomes EN 60947-5-1.

CENELEC has defined the dimensions and characteristics of two types of limit switch in the standards EN 50041 and EN 50047. These standards relate to Low voltage switchgear and controlgear for industrial use and define the enclosure dimensions, the operating point for various head actuators, the earth terminal requirement, the terminal marking and the minimum degree of IP protection.

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How to read and understand the bar chart

The following example relates to a unit which has a snap action basic and which has a roller pin plunger actuator i.e. ZLCB01C. When reading these bar charts follow these rules:

1. Check what type of actuator was used to test the product, this is on the drawings which show the head style available. It will be one of two types:
   a) Vertical travel plunger
   b) Linear cam travel
2. Start reading from top left of figure B, at the arrow labeled ''A''.
3. Follow the black arrows and the black strip on the chart. The black strip indicates that there is a circuit between the terminals whose numbers are shown on the left and when white there is no circuit.

All dimensions are in mm/(inches).

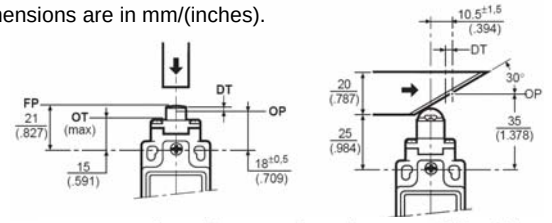


Figure A

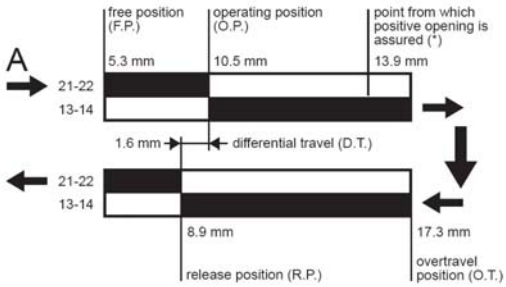


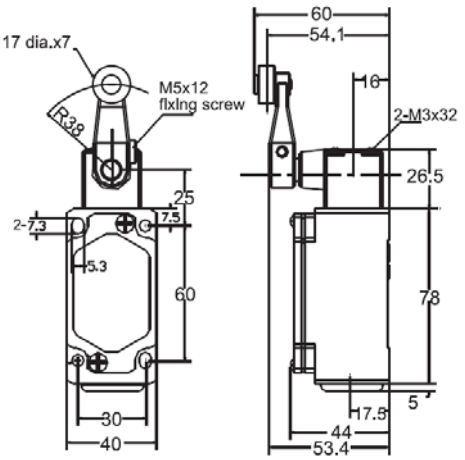
Figure B

Look at Figures A and B as examples. Actuator type used for test is the linear Cam travel type (b) shown left. The start point is at the arrow marked ''A'' (See fig. B). This shows the free position to be 5.3mm from the vertical center line of the unit. At this stage there is a circuit between the terminals 21-22 but no circuit between terminals
13-14. The unit can be actuated until it reaches the operating position which is 10.5 mm from the center line – a travel distance of 10.5 – 5.3 =5.2 mm from the free position. At this point the circuit arrangement changes – no circuit between 21-22 but making a circuit between 13-14. If, however, the contacts of terminals 21-22 weld together and will not separate, a mechanical safety feature will take effect if the switch is travelled past the point from which positive opening is assured, 13.9 mm. Actuator can continue to travel to the end position (O.T. Overtravel Position) at total travel position 17.3mm. As the switch returns it reaches the release position at 8.9 mm from the center line. The circuit will change back to the original state and the difference between the operating position and the release position gives what is known as the differential travel i.e. 10.5 – 8.9 = 1.6 mm. The asterisk (*) indicates the point from which the positive opening is assured.

	ZLA	ZLB	ZLC	ZLD	ZLE	ZLF
Standard	EN 50041	EN 50041	EN 50047	EN 50047	EN 50047 3-cable entry	EN 50047 2-cable entry
Enclosure	Metal	Plastic	Metal	Plastic	Metal	Plastic
Operating Temperature	-25~ +120° C	-25~ +80° C	-25~ +80° C	-25~ +80° C	-25~ +80° C	-25~ +80° C
Humidity	<95%RH	<95%RH	<95%RH	<95%RH	<95%RH	<95%RH
Shock/Vibration	10 g / 50 g	10 g / 50 g	10 g / 50 g	10 g / 50 g	10 g / 50 g	10 g / 50 g
Operating Speed	0.05mm-2m/s	0.05mm-2m/s	0.05mm-2m/s	0.05mm-2m/s	0.05mm-2m/s	0.05mm-2m/s
Operating Frequency	120 ops/min	120 ops/min	120 ops/min	120 ops/min	120 ops/min	120 ops/min
Contact Resistance	<25mΩ	<25mΩ	<25mΩ	<25mΩ	<25mΩ	<25mΩ
Degree of Protection	IP67	IP65	IP67	IP65	IP67	IP65
Electrical Rating	AC15 A600 DC13 Q300	AC15 A300 DC13 Q300	AC15 A300 DC13 Q300	AC15 A300 DC13 Q300	AC15 A600 DC13 Q300	AC15 A300 DC13 Q300
Dielectric Strength	2500V	2500V	2500V	2500V	2500V	2500V
Mechanical Life	10^7	10^7	10^7	10^7	10^7	10^7
Electrical Life	$5X10^5$	$5X10^5$	$5X10^5$	$5X10^5$	$5X10^5$	$5X10^5$

Mounting Dimensions

<ZLA>



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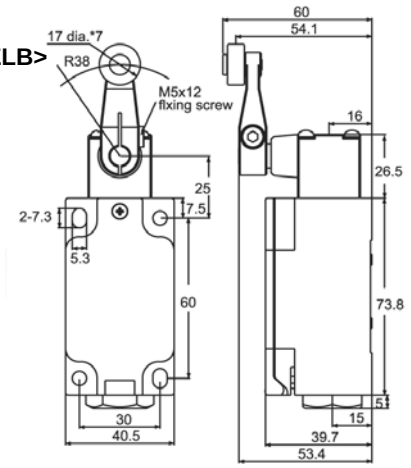

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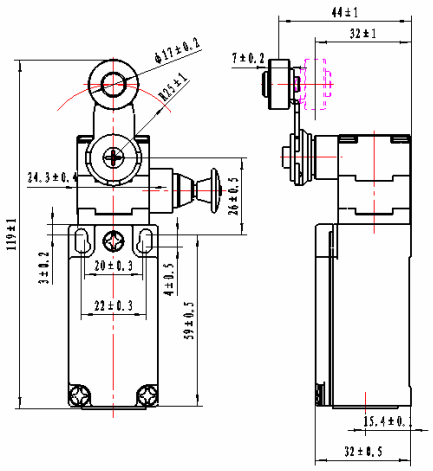

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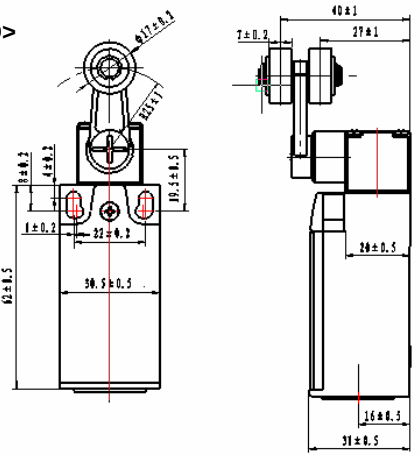

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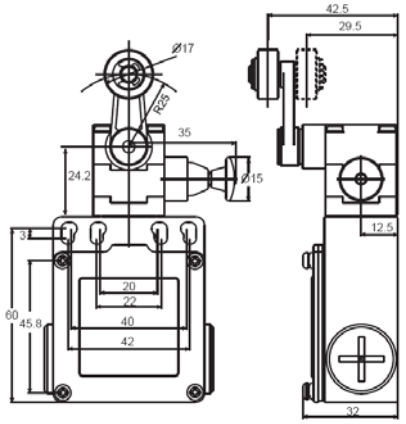

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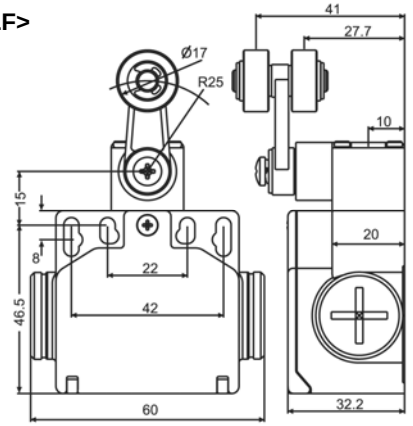

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Selection Guide

ZLA | A | 01 | A1B | - | R

ZLA — Enclosure Type

ZLA	EN50041(Metal)
ZLB	EN50041(Plastic)
ZLC	EN50047(Metal)
ZLD	EN50047(Plastic)
ZLE	3-cable entry (Metal)
ZLF	2-cable entry (Plastic)

A — conduit sizes

A	1/2 NPT
C	M20

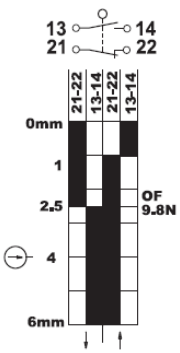
01 — Contact block type (see below)

A1B — Acutator Style (see next page)

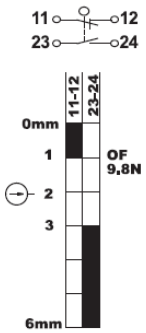
R — Pull Reset

Contact Block Type

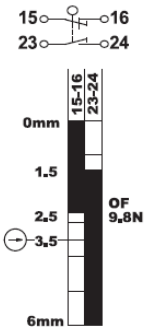
01
1NO/1NC
Snap Action



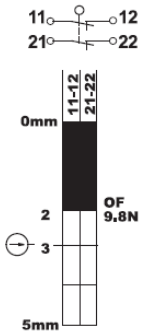
03
1NO/1NC
Break Before Make



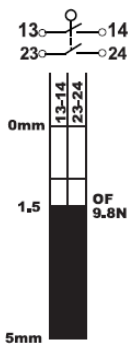
04
1NO/1NC
Make Before Break



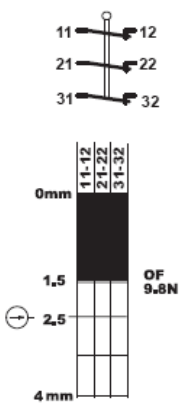
06
2NC
Slow Action



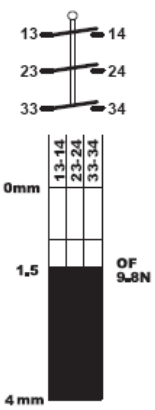
07
2NO
Slow Action



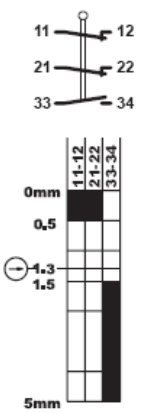
30
3NC
Slow Action



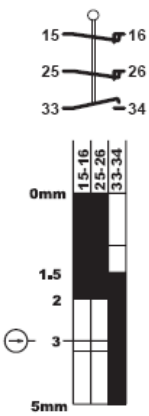
31
3NO
Slow Action



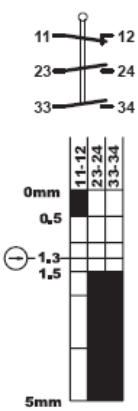
34
2NC/1NO
Break Before Make



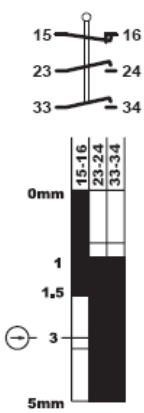
35
2NC/1NO
Make Before Break



32
2NC/1NO
Break Before Make



33
1NC/2NO
Make Before Break



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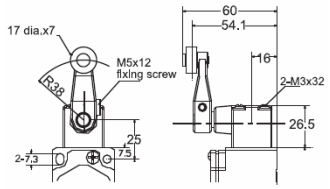
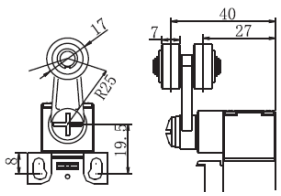
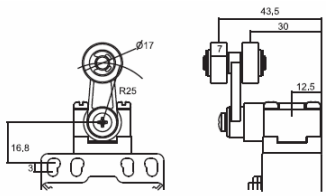
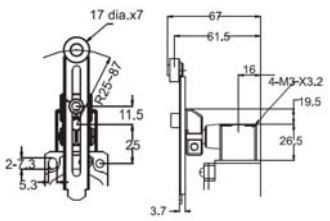
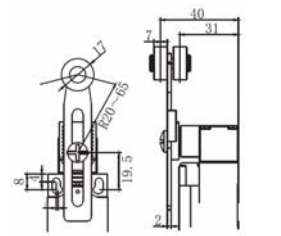
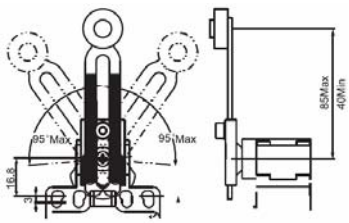
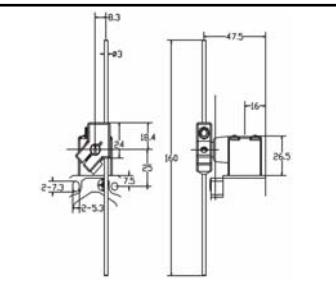
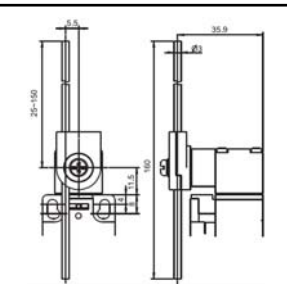
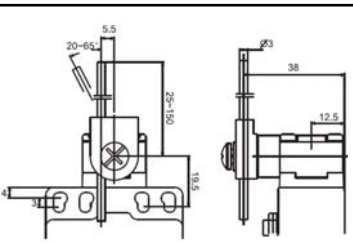
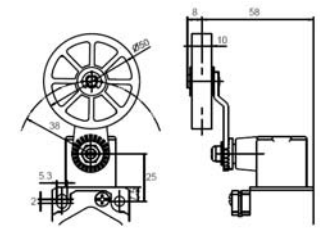
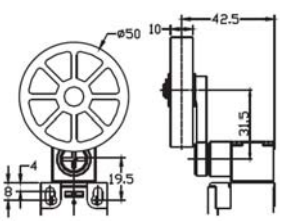
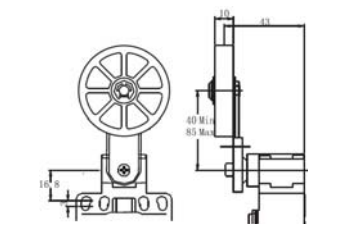
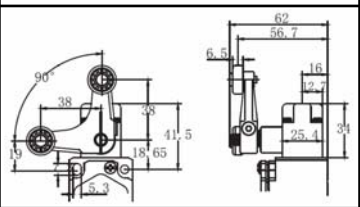
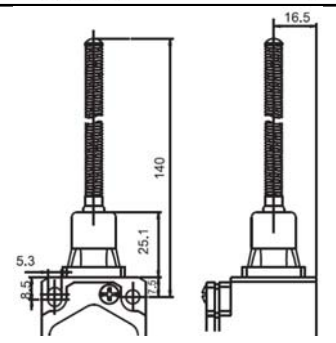
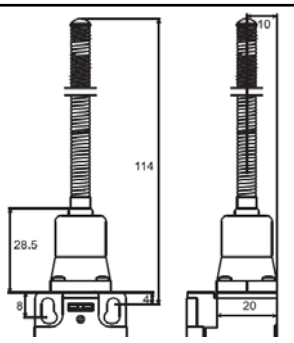
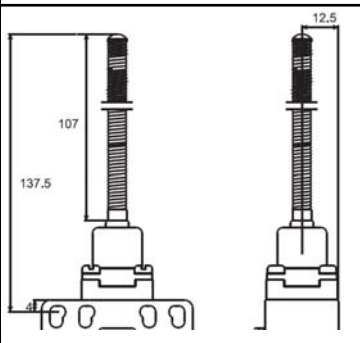
	ZLA, ZLB	ZLC, ZLD	ZLE, ZLF
Fixed Side Rotary Lever **A1A (plastic roller)** **A1B (metal roller)**			
Adj. Side Rotary Lever **A2A (plastic roller)** **A2B (metal roller)**			
Adj. Side Rotary Rod **A4J (Metal Rod)**			
50mm Side Rotary Lever **A1Y (Fixed)** **A2Y (Adjustable)**			
Yoke Lever **V**			
Spring Coil: E7B **Plastic Rod, Spring Coil: E6A** **Cat Whisker, Spring Coil: E5G**			

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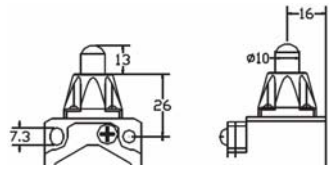
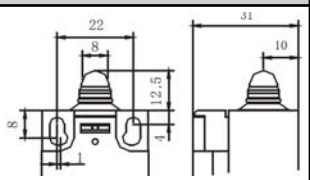
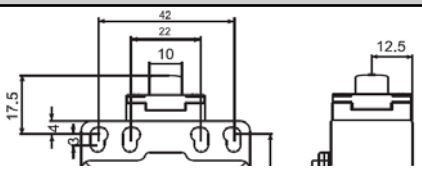
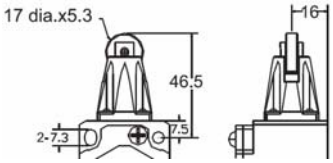
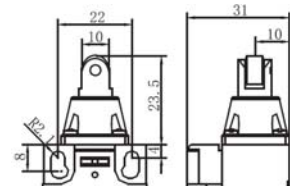
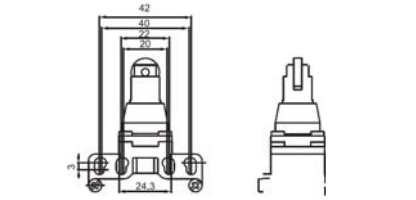
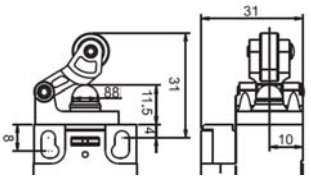
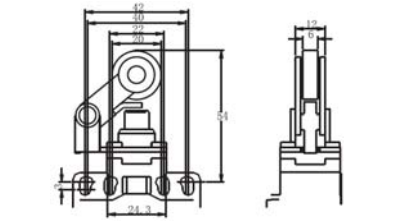
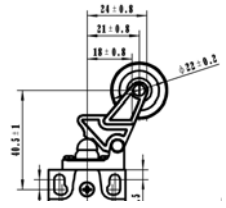
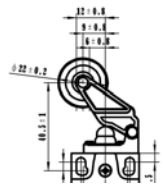
	ZLA, ZLB	ZLC, ZLD	ZLE, ZLF
B (Plunger)			
C (Roller Plunger)			
D (Roller Lever)			
F (Vertical Roller Lever)			
F1 (Roller Lever)