

# LIMITEX AP

## HAZARDOUS AREAS

### Cross limit switch



PRODUCED FOR T.E.R. SRL BY COEL MOTORI SRL



Explosion proof cross position limit switch. Rugged and reliable, Limitex AP is designed to control the movement of overhead travelling cranes, hoists and complex machine tools operating in potentially explosive areas.

## FEATURES

- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- Operation frequency: 3600 operations/hour max.
- IP protection degree: Limitex AP is classified IP66.
- Extreme temperature resistance: -40°C to +60°C.
- It features rugged external enclosure made of G20 cast iron and cross rod support made of zinc alloy. Internal components are made of materials which guarantee long mechanical life and continuous performance.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.


## OPTIONS

- 2 or 4 snap action switches with 1NO+1NC change-over contacts.
- Cross rods move to 3 or 4 maintained positions, with movement every 90°.
- Modular adapter with fixing points.

## CERTIFICATIONS

- CE marking.
- Atex certification EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009.
- Conformity to Standards IECEx IEC 60079-0:2011, IEC 60079-1:2007-04 and IEC 60079-31:2008.

## CERTIFICATIONS

|   |  |
|---|--|
| Conformity to Atex Standards                                | EN 60079-0:2009 Explosive atmospheres - Equipment - General requirements   |
|   | EN 60079-1:2007 Explosive atmospheres - Equipment protection by flameproof enclosures "d"  |
|   | EN 60079-31:2009 Explosive atmospheres - Equipment dust ignition protection by enclosure "t"   |
| Conformity to IECEx Standards                               | IEC 60079-0:2011 Explosive atmospheres - Equipment - General requirements  |
|   | IEC 60079-1:2007-04 Explosive atmospheres - Equipment protection by flameproof enclosures "d"  |
|   | IEC 60079-31:2008: Explosive atmospheres - Equipment dust ignition protection by enclosure "t"   |
| Atex Certification  | INERIS 13ATEX0020X   |
| IECEx Certification   | IECEx INE 13.0051X   |
| Certification for group I, IIA, IIB and IIC with the marks* | MINING: I M2 Ex d I Mb (ATEX)<br>Ex d I Mb (IECEx)   |
|   | GAS Zone 1 and 2: II2G Ex d IIB T6 Gb or Ex d IIC T6 Gb (ATEX)<br>Ex d IIB T6 or Ex d IIC T6 Gb (IECEx)  |
|   | DUST Zone 21 and 22: II2D Ex tb IIIC T85°C Db IP66 (ATEX)<br>Ex tb IIC T85°C Db IP66 (IECEx)   |
|   | GAS & DUST: II2GD<br>Ex d IIB or IIC T6 Gb<br>Ex tb IIC T85°C Db IP66  |
| Conformity to Community Directives                          | 2014/35/UE Low Voltage Directive   |
|   | 2006/42/CE Machinery Directive   |
| Conformity to CE Standards                                  | EN 60204-1 Safety of machinery - Electrical equipment of machines  |
|   | EN 60947-1 Low-voltage switchgear and controlgear  |
|   | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
|   | EN 60529 Degrees of protection provided by enclosures  |
| Markings and homologations                                  | CE  IEC IECEx  |

## GENERAL SAFETY SPECIFICATIONS

|                           |            |
|---------------------------|------------|
| Maximum power supply      | 250 Vac    |
| Maximum current intensity | 3 A        |
| Maximum dissipated power  | 2 Watt     |
| Rated frequency           | 50 / 60 Hz |

## GENERAL TECHNICAL SPECIFICATIONS

|                                 |                          |
|---------------------------------|--------------------------|
| Operational ambient temperature | -40°C/+60°C              |
| Protection degree               | IP 66                    |
| Operation frequency             | 3600 operations/hour max |
| Cable entry                     | Nr. 2 M20x1.5            |
|                                 | Nr. 2 M25x1.5            |
|                                 | Nr. 2 ½ NPT              |

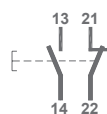
\* The user is responsible for choosing the proper limit switch protection type, group and maximum case temperature. The user is also responsible for the correct installation, connection to the electrical network and use and maintenance of the electrical devices.

## LIMITEX AP WITH 2 MICROSWITCHES

### TECHNICAL SPECIFICATIONS OF THE MICROSWITCHES

|                           |  |
|---------------------------|--|
| Utilisation category      | AC 15  |
| Rated operational current | 3 A  |
| Rated operational voltage | 250 Vac  |
| Rated thermal current     | 10 A   |
| Rated insulation voltage  | 300 Vac  |
| Mechanical life           | 1x10 <sup>6</sup> operations   |
| Connections               | Screw-type terminals   |
| Wires                     | 1x2.5 mm <sup>2</sup> , 2x1.5 mm <sup>2</sup><br>(UL - (c)UL: use 60°C or 75°C copper (CU) conductor and wire 16-18 AWG) |
| Tightening torque         | 0.8 Nm   |
| Microswitch type          | Double break, snap action  |
| Contacts                  | 1NO+1NC<br>(All NC contacts are of the positive opening operation type $\ominus$ )                                       |

Scheme



## LIMITEX AP WITH 2 MICROSWITCHES - MAXIMUM ACTUATING DIMENSIONS

### T-type rod - Cross rod with 3 maintained positions

- Pre-travel angle for rotation contact operation: 70°-49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°

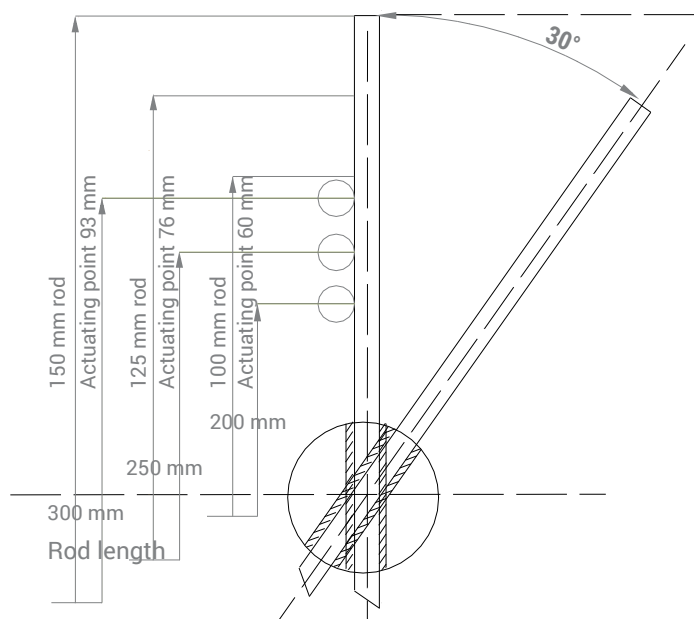
### Rod - Rod and Roller

- Pre-travel angle for rotation contact operation: 24°
- Maximum rotation angle: 65°

### Cross rod with 4 maintained positions

- Pre-travel angle for rotation contact operation: 49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°
- Maintained positions each: 90°

In order to ensure proper operations, the dimensions shall not be increased; anyhow, they can be decreased, taking into account that the closer the impact point is to the center of the head, the higher the impact and the mechanical wear of rod and shaft are. **IMPORTANT:** the maximum impact speed is 1.35 m/s, referring to the ideal impact points showed in the drawing.

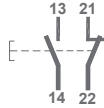


## LIMITEX AP WITH 4 MICROSWITCHES

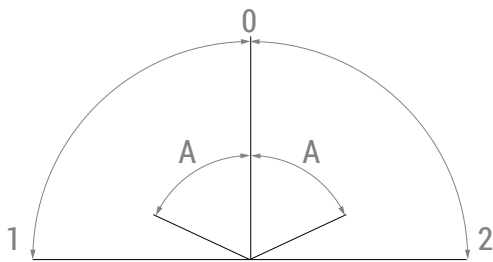
### TECHNICAL SPECIFICATIONS OF THE MICROSWITCHES

|                           |   |
|---------------------------|---|
| Rated operational current | 16 A at 250 Vac                               |
| Rated operational voltage | 500 Vac                                       |
| Rated thermal current     | 10 A  |
| Rated insulation voltage  | 300 Vac                                       |
| Mechanical life           | 10x10 <sup>6</sup> operations                 |
| Connections               | Screw-type terminals                          |
| Wires                     | 1x2.5 mm <sup>2</sup> , 2x1.5 mm <sup>2</sup> |
| Microswitch type          | Snap action                                   |
| Contacts                  | 1NO+1NC                                       |

Scheme



### LIMITEX AP WITH 4 MICROSWITCHES - OPERATION ANGLES



0 - Reset position

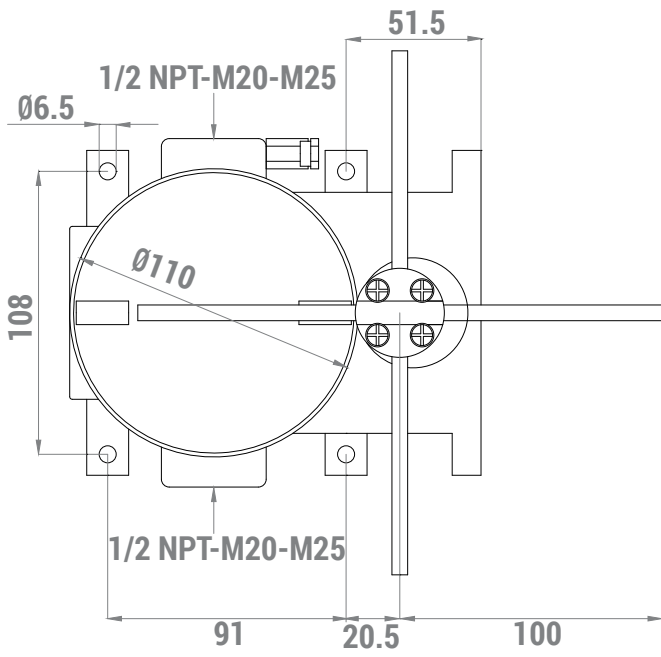
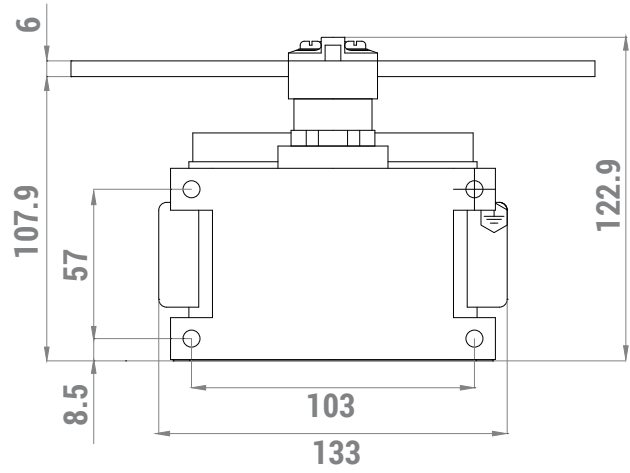
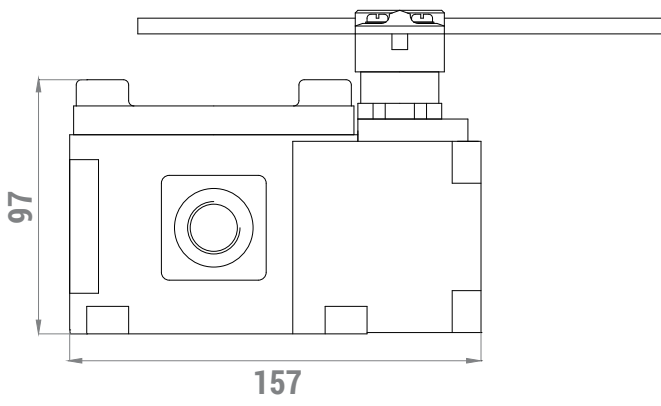
A - Microswitch working angle: 65°

1 - Maximum left handed operation: 90°


2 - Maximum right handed operation: 90°

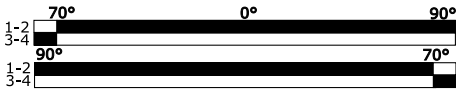
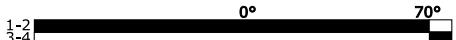
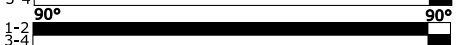
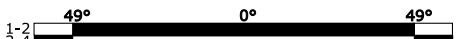
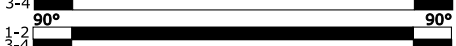
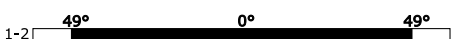
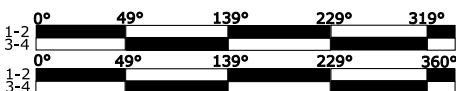
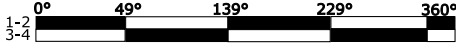
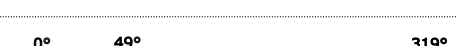
The end of round of the "cross bar" limit switches have no limit stop (they can rotate around 360°).

# OVERALL DIMENSIONS (mm)




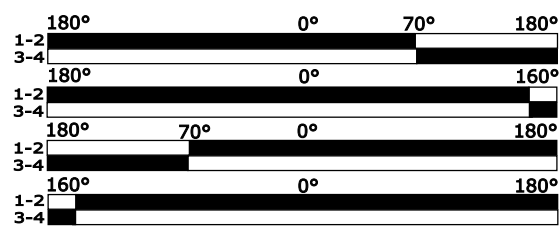
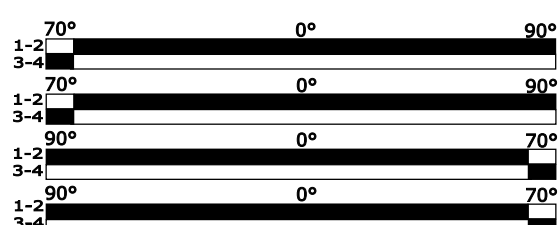
## LIMIT SWITCHES LIMITEX AP WITH 2 MICROSWITCHES

Limit switches are equipped with 1NO+1NC snap action switches 

| Actuating travel  | Positions    | Rod      | Code       |
|---|--------------|----------|------------|
|    | 3 maintained | "T" type | EX33710100 |
|    | 3 maintained | Cross    | EX33710200 |
|    | 3 maintained | "T" type | EX33711100 |
|    | 3 maintained | Cross    | EX33711200 |
|    | 3 maintained | "T" type | EX33712100 |
|    | 3 maintained | Cross    | EX33712200 |
|    | 3 maintained | "T" type | EX33713100 |
|    | 3 maintained | Cross    | EX33713200 |
|    | 3 maintained | "T" type | EX33714100 |
|    | 3 maintained | Cross    | EX33714200 |
|    | 3 maintained | "T" type | EX33715100 |
|    | 3 maintained | Cross    | EX33715200 |
|   | 4 maintained | Cross    | EX33750100 |
|  | 4 maintained | Cross    | EX33751100 |
|  | 4 maintained | Cross    | EX33752100 |

## LIMIT SWITCHES LIMITEX AP WITH 4 MICROSWITCHES

Limit switches are equipped with 1NO+1NC snap action switches 

| Actuating travel  | Rod length | Code       |
|---|------------|------------|
|  | 200 mm     | EX26755100 |
|  | 200 mm     | EX26755200 |