

# Enclosed switches ATEX

2CMC300001D0003 November 2007



**ABB**

# Enclosed switches ATEX

## Products for use in explosive atmospheres – ATEX

ABB offers switches for use within dust explosive atmospheres, Category 3 for use in Zone 22. Here is a simple guide to ATEX, its meaning and how to choose the right products for your application.

**ATEX = "ATmosphere EXplosive"**

## What is ATEX ?

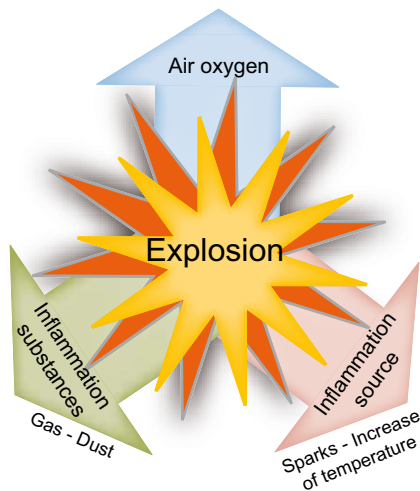
ATEX is a European Directive (94/9/EC) valid for products to be used within an explosive atmosphere. The ATEX directive has been in force throughout the European Union since 1 July 2003, replacing the existing different national and European legislation relating to explosive atmospheres.

## Why ATEX ?

An ambience with the potential to become an explosive atmosphere during operating conditions and/or under the influence of the environment is defined as a potentially explosive atmosphere. Products covered by directive 94/9/EC are defined as intended for use in potentially explosive atmospheres.

Directive 94/9/EC defines an explosive atmosphere as a mixture of:

- flammable substances gases, vapors, mists or dusts
- with air
- under specific atmospheric conditions
- in which, after ignition has occurred, combustion spreads to the flammable mixture

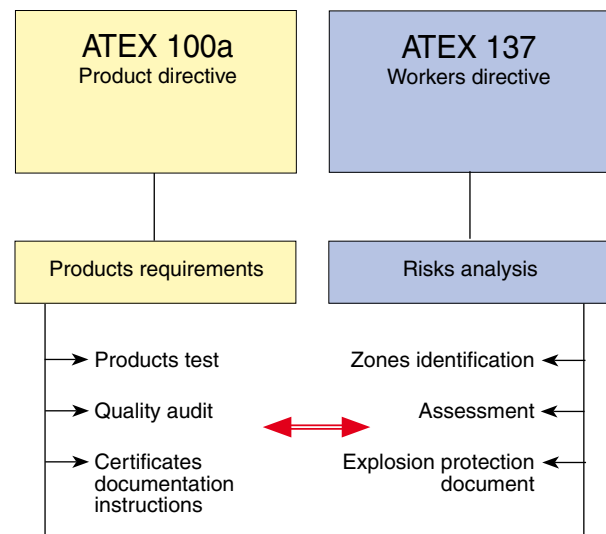
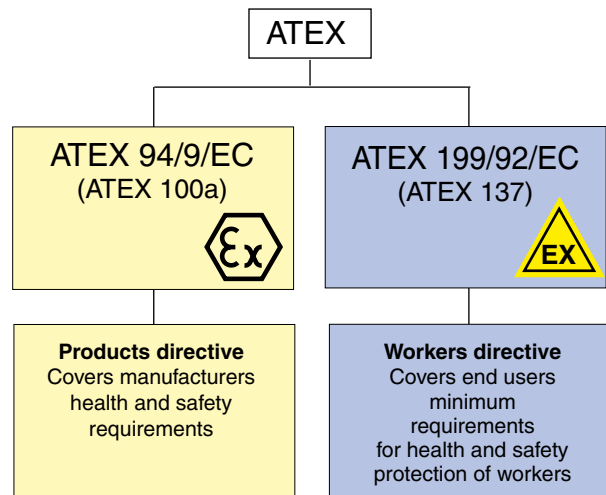


## Harmonised European ATEX standard

The European Union has adopted two harmonized directives in the field of health and safety. The directives are known as ATEX 100a and ATEX 137.

Directive ATEX 100a (94/9/EC) lays down minimum safety requirements for products intended for use in potentially explosive atmospheres in European Union member states.

Directive ATEX 137 (99/92/EC) defines minimum requirements for health and safety at the workplace, for working conditions and for the handling of products and materials in potentially explosive atmospheres. This directive divides the workplace into zones and defines criteria by which products are categorized within these zones.



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## Levels of protection for the various equipment categories

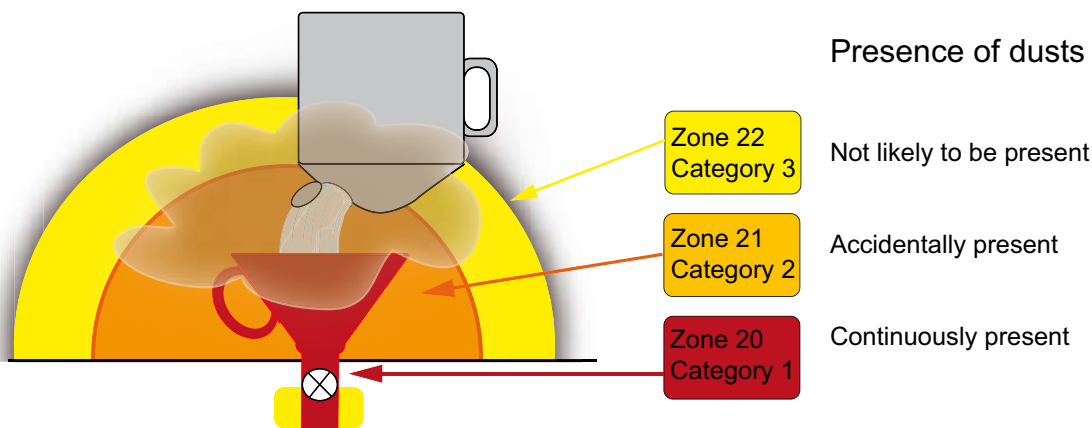
| Level of protection | Category |          | Performance of protection   | Conditions of operation   |
|---------------------|----------|----------|---|---|
|                     | Group I  | Group II |   |   |
| Very High           | M1       |          | Two independent means of protection or safe even when two faults occur independently of each other.   | Equipment remains energized and functioning when explosive atmosphere present.          |
| Very high           |          | 1        | Two independent means of protection or safe even when two faults occur independently of each other.   | Equipment remains energized and functioning in Zones 0, 1, 2 (G) and/or 20, 21, 22 (D). |
| High                | M2       |          | Suitable for normal operation and severe operating conditions. If applicable also suitable for frequently occurring disturbances or for faults which are normally taken into account. | Equipment de-energized when explosive atmosphere is recognised.                         |
| High                |          | 2        | Suitable for normal operation and frequently occurring disturbances or equipment where faults are normally taken into account.  | Equipment remains energized and functioning in zones 1, 2 (G) and/or 21 22 (D)          |
| Normal              |          | 3        | Suitable for normal operation.  | Equipment remains energized and functioning in Zone 2 (G) and/or 22 (D).                |

### Group I

Equipment intended for use in underground parts of mines as well as those parts of surface installations of such mines likely to be endangered by flammable vapors and/or flammable dusts.

### Group II

Equipment intended for use in other places exposed to explosive atmospheres.



The table describes the zones in an installation where there is a potential for explosive atmospheres. The owner of the installation must analyze and assess the area in which the explosive gas/dust mixture may occur, and if necessary must divide it into zones. This process of zoning then allows the correct plant and equipment to be selected for use in the area. The various equipment categories must be capable of operating in accordance with the manufacturer's operating specifications at defined levels of protection.

Selection of category of Ex-equipment for use in zone according to the ATEX-directive

| Zones |        | Presence of potentially explosive atmosphere | Type of risk |
|-------|--------|--|--------------|
| Gas G | Dust D |  |              |
| 0     | 20     | Present continuously or long periods         | Permanent    |
| 1     | 21     | Likely to occur in normal occasionally       | Potential    |
| 2     | 22     | Not likely to occur in normal operation      | Minimal      |

| G (Gas)  | 1 | 0, 1, 2    |
|----------|---|------------|
|          | 2 | 1, 2       |
|          | 3 | 2          |
| D (Dust) | 1 | 20, 21, 22 |
|          | 2 | 21, 22     |
|          | 3 | 22         |

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## Declaration of conformity

The declaration is only valid in conjunction with the instructions contained in the installation manual relating to the safe use of the product throughout its service life.

The certificate is invalidated if the instructions are found not to have been adhered to during operation of the product.


## Declaration of ATEX Compliance

A declaration of ATEX compliance is available at [www.abb.com](http://www.abb.com)



## Example of product label

### Meaning of ATEX information of the label

-  States that the product fulfils the ATEX directive
- II** Equipment group (II = remaining risk areas)
- 3 D** Equipment category (can be used in zone 22)
- T 65°C** Max surface temperature
- X** Conditions for installation and use, see instruction sheet



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## Thermoplastic (PBT)



BWS 325ExD

2CMC341011F0037

Cable entries: Metric threaded when EX II 3D degree of protection is required  
EX II 3D glands must be used.  
Glands not included

Lockable: Yes

Degree of protection: IP 65, EX II 3D

Auxiliary contacts: Included

Neutral terminal: Included

Colors: Enclosure: Grey  
Handle: Black

Max surface temp.: T 75° C

| Poles | I A<br>AC 23A<br>400/500/690 V | Cable entries<br>M | Terminals<br>mm <sup>2</sup> | Type       | Order Code      | Pack.<br>qty | Weight<br>kg/ea |
|-------|--------------------------------|--------------------|------------------------------|------------|-----------------|--------------|-----------------|
| 3     | 25 25 16                       | 2+2/M25            | 10                           | BWS 325ExD | 2CMA142105R1000 | 1            | 0.40            |

- Extra auxiliary contacts to be ordered separately.

| Dimension mm |     |     |    |
|--------------|-----|-----|----|
| Type         | H   | W   | D  |
| BWS 325ExD   | 120 | 103 | 58 |

## Aluminum alloy



LBAS 325ExD

2CMC341011F0039

Cable entries: Metric threaded when EX II 3D degree of protection is required  
EX II 3D glands must be used.  
Glands not included.

Lockable: Yes

Degree of protection: IP 65, EX II 3D

Auxiliary contacts: Not included

Neutral terminal: Included

Colors: Enclosure: Grey  
Handle: Black

Max surface temp.: T 70° C

| Poles | I A<br>AC 23A<br>400/500/690 V | Cable entries<br>M | Terminals<br>mm <sup>2</sup> | Type        | Order Code      | Pack.<br>qty | Weight<br>kg/ea |
|-------|--------------------------------|--------------------|------------------------------|-------------|-----------------|--------------|-----------------|
| 3     | 25 25 16                       | 2xM25              | 10                           | LBAS 325ExD | 2CMA142125R1000 | 1            | 0.68            |
| 3     | 45 45 20                       | 2xM25+M16          | 10                           |             |                 |              |                 |
| 3     | 45 45 20                       | 2xM32+M16          | 16                           | LBAS 336ExD | 2CMA142127R1000 | 1            | 1.25            |
| 3     | 75 58 20                       | 1xM32              | 16                           |             |                 |              |                 |
| 3     | 75 58 20                       | 2xM32+M16          | 35                           | LBAS 363ExD | 2CMA145277R1000 | 1            | 1.30            |
|       |                                | 1xM32              | 35                           |             |                 |              |                 |

- Extra auxiliary contacts to be ordered separately.

- Lid interlocking included in switches LBAS 336ExD and LBAS 363ExD.



LBAS 336ExD

2CMC341011F0040

| Dimension mm |     |     |     |
|--------------|-----|-----|-----|
| Type         | H   | W   | D   |
| LBAS 325ExD  | 150 | 125 | 77  |
| LBAS 336ExD  | 207 | 147 | 140 |
| LBAS 363ExD  | 207 | 147 | 140 |

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## Polycarbonate plastic (PC)

Cable entries: Metric threads  
 Lockable: Yes  
 Degree of protection: IP 65, EX II 3D  
 Auxiliary contacts: Included  
 Neutral terminal: Included  
 Colors: Enclosure: Grey  
 Handle: Black  
 Max surface temp.: T 60° C

| Poles | I, A<br>AC 23A<br>400/500/690 V | Cable entries/<br>side | Terminals<br>mm <sup>2</sup> | Type      | Order Code      | Pack.<br>qty | Weight<br>kg/ea |
|-------|---------------------------------|------------------------|------------------------------|-----------|-----------------|--------------|-----------------|
| 3     | 16 16 10                        | 2xM25+M16              | 10                           | OTP16T3MX | 1SCA022839R8450 | 1            | 0.50            |
| 3     | 30 30 20                        | 2xM32+M16              | 35                           | OTP25T3MX | 1SCA022839R8530 | 1            | 0.90            |
| 3     | 38 32 20                        | 2xM32+M16              | 35                           | OTP36T3MX | 1SCA022839R8610 | 1            | 0.90            |
| 3     | 63 50 35                        | 2xM32+M16              | 35                           | OTP63T3MX | 1SCA022839R8700 | 1            | 1.00            |
| 3     | 80 60 40                        | 2xM50+M16              | 70                           | OTP75T3MX | 1SCA022839R8880 | 1            | 2.40            |
| 3     | 90 70 50                        | 2xM50+M16              | 70                           | OTP90T3MX | 1SCA022839R8960 | 1            | 2.40            |

| Dimension mm |     |     |     |
|--------------|-----|-----|-----|
| Type         | H   | W   | D   |
| OTP16T3MX    | 150 | 130 | 60  |
| OTP25T3MX    | 200 | 145 | 90  |
| OTP36T3MX    | 200 | 145 | 90  |
| OTP63T3MX    | 200 | 145 | 90  |
| OTP75T3MX    | 400 | 200 | 140 |
| OTP90T3MX    | 400 | 200 | 140 |

## Steel sheet

Cable entries: Ring flange entries  
 Lockable: Yes  
 Degree of protection: IP 65, EX II 3D  
 Auxiliary contacts: Included  
 Neutral terminal: Not included  
 Colors: Enclosure: Grey  
 Handle: Black  
 Max surface temp.: T 80° C

### Cable entries from top and bottom

| Poles | I, A<br>AC 23A<br>400/500/690 V | Cable entries/<br>side | Number of<br>cover flanges<br>included | Type         | Order Code      | Pack.<br>qty | Weight<br>kg/ea |
|-------|---------------------------------|------------------------|--|--------------|-----------------|--------------|-----------------|
| 3     | 135 125 80                      | 4xring-flange          | 6                                      | OT160ELRR3TX | 1SCA022839R9420 | 1            | 19.00           |
| 3     | 200 200 200                     | 4xring-flange          | 6                                      | OT200KLRR3TX | 1SCA022839R9510 | 1            | 21.00           |
| 3     | 250 250 250                     | 4xring-flange          | 6                                      | OT250KLRR3TX | 1SCA022839R9690 | 1            | 21.00           |
| 3     | 315 315 315                     | 4xring-flange          | 6                                      | OT315KLRR3TX | 1SCA022839R9770 | 1            | 21.00           |
| 3     | 400 400 400                     | 4xring-flange          | 5                                      | OT400DLRR3TX | 1SCA022839R9850 | 1            | 27.00           |
| 3     | 630 630 630                     | 4xring-flange          | 4                                      | OT630KLRR3TX | 1SCA022839R9930 | 1            | 31.00           |

- Ring-flanges and additional flange covers to be ordered separately

| Dimension mm |      |     |     |
|--------------|------|-----|-----|
| Type         | H    | W   | D   |
| OT160ELRR3TX | 600  | 400 | 230 |
| OT200KLRR3TX | 600  | 400 | 230 |
| OT250KLRR3TX | 600  | 400 | 230 |
| OT315KLRR3TX | 600  | 400 | 230 |
| OT400DLRR3TX | 800  | 400 | 230 |
| OT630KLRR3TX | 1000 | 400 | 230 |



OTP16T3MX

0710CD15



OTP36T3MX

0710CD14



OT400DLRR3TX

0710CD20

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OT630KAUR3TX

0711CD01

## Cable entries from bottom

| Poles | I, A<br>AC 23A<br>400/500/690 V | Cable entries/<br>bottom side | Number of<br>cover flanges<br>included | Type         | Order Code      | Pack.<br>qty | Weight<br>kg/ea |
|-------|---------------------------------|-------------------------------|--|--------------|-----------------|--------------|-----------------|
| 3     | 105 70 50                       | 4xring-flange                 | 4                                      | OT90AAUR3TX  | 1SCA022840R0880 | 1            | 12.00           |
| 3     | 125 90 70                       | 4xring-flange                 | 4                                      | OT125EAUR3TX | 1SCA022840R0960 | 1            | 12.00           |
| 3     | 135 125 80                      | 4xring-flange                 | 2                                      | OT160EAUR3TX | 1SCA022840R1000 | 1            | 21.00           |
| 3     | 200 200 200                     | 4xring-flange                 | 2                                      | OT200KAUR3TX | 1SCA022840R1180 | 1            | 23.00           |
| 3     | 250 250 250                     | 4xring-flange                 | 2                                      | OT250KAUR3TX | 1SCA022840R1260 | 1            | 27.00           |
| 3     | 315 315 315                     | 4xring-flange                 | 2                                      | OT315KAUR3TX | 1SCA022840R1340 | 1            | 27.00           |
| 3     | 400 400 400                     | 4xring-flange                 | 2                                      | OT400DAUR3TX | 1SCA022840R1420 | 1            | 30.00           |
| 3     | 630 630 630                     | 8xring-flange                 | 4                                      | OT630KAUR3TX | 1SCA022840R1510 | 1            | 50.00           |

- Ring-flanges and additional flange covers to be ordered separately

| Dimension mm |      |     |     |
|--------------|------|-----|-----|
| Type         | H    | W   | D   |
| OT90AAUR3TX  | 400  | 400 | 230 |
| OT125EAUR3TX | 400  | 400 | 230 |
| OT160EAUR3TX | 600  | 400 | 230 |
| OT200KAUR3TX | 600  | 400 | 230 |
| OT250KAUR3TX | 800  | 400 | 230 |
| OT315KAUR3TX | 800  | 400 | 230 |
| OT400DAUR3TX | 800  | 400 | 230 |
| OT630KAUR3TX | 1000 | 800 | 230 |

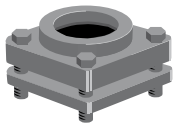
## Accessories

### Ring-flanges for different cable diameters

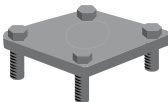
| Outside diameter | Type     | OrderCode       | Pack.<br>qty | Weight<br>kg/ea |
|------------------|----------|-----------------|--------------|-----------------|
| 22...35          | OEZXR134 | 1SCA022277R5610 | 1            | 0.45            |
| 31...44          | OEZXR143 | 1SCA022277R5880 | 1            | 0.40            |
| 39...51          | OEZXR150 | 1SCA022277R6000 | 1            | 0.35            |
| 46...59          | OEZXR158 | 1SCA022277R6260 | 1            | 0.30            |

### Ring-flange covers with knock-out openings

| Knock-out<br>size Ø [mm] | Type     | Order Code      | Pack.<br>qty | Weight<br>kg/ea |
|--------------------------|----------|-----------------|--------------|-----------------|
| 20,5                     | OEZXR020 | 1SCA022656R8130 | 1            | 0.16            |
| 22,5                     | OEZXR023 | 1SCA022277R5290 | 1            | 0.16            |
| 25,5                     | OEZXR025 | 1SCA022656R8120 | 1            | 0.16            |
| 37                       | OEZXR037 | 1SCA022277R5450 | 1            | 0.16            |
| 40,5                     | OEZXR040 | 1SCA022656R8300 | 1            | 0.16            |



S00514A



S00515A



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