



8 Information Ex-proof

10 Visual signalling

- 10 dSD Ex-Proof LED Signal Beacon
- 12 mDD Ex-Proof LED Signal Beacon
- 14 mMD Ex-Proof LED Multi Colour Signal Beacon
- 16 dSF Ex-Proof Xenon Strobe Beacon

18 Audible signalling

- 18 dMS Ex-Proof Multi-Tone Siren
- 20 mHPT Ex-Proof Signal Horn
- 22 mHTG Ex-Proof Signal Horn
- 24 dHH Ex-Proof Signal Horn
- 26 dHW Ex-Proof Signal Bell

EX signalling devices

Complete range of explosion-proof signalling devices for all industries in which combustible gases, vapours and dusts are created during the production process.



Extensive range of visual and audible explosion-protected signalling devices for use in potentially explosive gas and dust atmospheres classified as Zones 1 and 21. All products offer ignition protection type "e" (increased safety) and can be connected easily and cost-effectively.

EXPLOSION-PROOF**SIGNAL BEACONS**

- Available as steady/flashing/strobe/rotating beacons with ignition protection type "d" (flame-proof enclosure) or "m" (encapsulation) for Zone 1, 21
- With LED technology or classic xenon flashing technology
- High degree of protection IP66
- LED multi-colour beacon with 5 signalling colours and 3 signalling modes for Zone 2, 22

**EXPLOSION-PROOF SIGNAL****HORNS AND SIGNAL BELLS**

- In ignition protection type "d" (flame-proof enclosure), plastic housing, IP66 degree of protection, for Zone 1
- In ignition protection type "m" (encapsulation), in plastic or metal housings, IP54/66 degree of protection, for Zone 1, 21
- Classic horn tone with electromechanical horn system

EXPLOSION-PROOF MULTI-TONE**ALARM SOUNDERS**

- Multi-tone alarm sounders with 32 signal tones, 2 tones can be switched externally, adjustable volume
- In ignition protection type "d" (flame-proof enclosure), housing made from copper-free seawater-resistant aluminium, for Zone 1, 21
- High degree of protection IP66

EXPLOSION-PROOF VISUAL-**AUDIBLE SIGNALLING SOUNDER**

- Xenon strobe beacon with audible signalling sounder with ignition protection type "m" (encapsulation), for Zone 1
- For universal applications in potentially explosive industrial areas



dSD Explosion-proof LED signal beacon

- Certified for gas and dust hazardous areas of zone 1, 2, 21, 22
- Flame-proof enclosure "d"
- Terminal connection chamber "increased safety e"
- Housing made of copper-free seawater-resistant aluminium, hardened glass lens
- 5 LED colours, very good signalling effect
- All models with protection cage made of stainless steel

II 2 G Ex d e IIC T5, T6 Gb

II 2 D Ex tb IIIC T95 °C, T80 °C Db

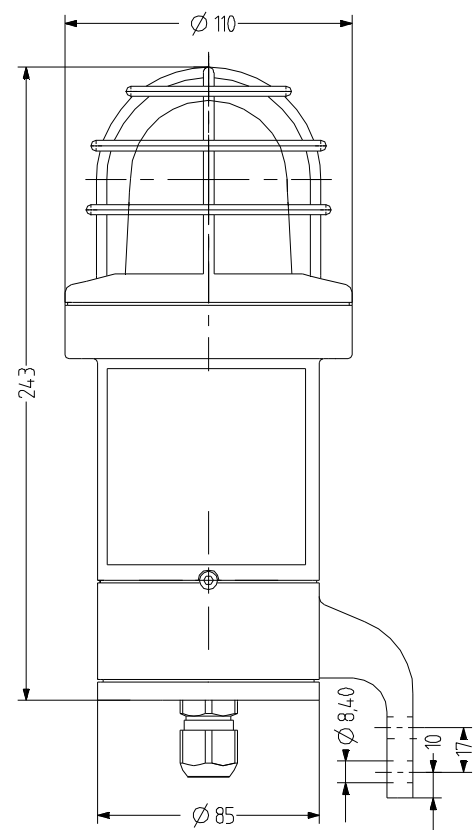
-55 °C ≤ Ta ≤ +55 °C

Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	Ø 110 mm, seawater-resistant aluminium, surface painted or powder-coated yellow/blue
Lens	tempered borosilicate glass,
Type of mounting	Bracket for wall mounting, any
Cable entry	Cable gland M20 × 1.5, sealing plug M20 × 1.5
Connection technology	1.5 mm ² fine wire and 2.5 mm ² single wire
Beacon type	LED steady beacon, LED flashing beacon, LED strobe beacon or LED all-round light
Light source	High Power LEDs
Luminous intensity	13–53 cd depending on colour
Speed of rotation	33/44 rpm switchable
Duty cycle	100 %
Operating temperature	-55 °C / +55 °C
Degree of protection	IP66 & IP67
Approval	PTB 03 ATEX 1230
Insulation class	III
Weight	2 kg



dSD

ORDER DATA

Type	Colour	Nominal voltage	Voltage range (V)	Nominal current (A)	Order number
dSD1	red	110-240 V AC	85-265	0,060-1,800	335 212 313
	blue	110-240 V AC	85-265	0,060-1,800	335 215 313
	green	110-240 V AC	85-265	0,060-1,800	335 216 313
	yellow	110-240 V AC	85-265	0,060-1,800	335 217 313
	clear	110-240 V AC	85-265	0,060-1,800	335 214 313
dSD2	red	24 V DC	+/- 20 %	0,190-1,600	335 212 005
		48 V DC	43-53	0,115-0,650	335 212 008
	blue	24 V DC	+/- 20 %	0,190-1,600	335 215 005
		24 V DC	+/- 20 %	0,190-1,600	335 216 005
	yellow	24 V DC	+/- 20 %	0,190-1,600	335 217 005
		48 V DC	43-53	0,115-0,650	335 217 008
	clear	24 V DC	+/- 20 %	0,190-1,600	335 214 005



MPL

ACCESSORIES

Type	Type of accessory	Order number
MPL	Mounting plate including explosion-proof junction box	335 500 000

mDD Explosion-proof LED signal beacon

- Certified for gas and dust hazardous areas of zone 1, 2, 21, 22
- Encapsulation "m"
- Polycarbonate plastic housing
- mounting bracket V4A

- 5 LED colours
- Degree of protection IP 66
- Protection class II (AC) or III (DC)
- Terminal connection chamber "increased safety e"

II 2 G Ex e mb (ib) IIC T4

II 2 D Ex mbD tD A21 IP 66 T130 °C

-40 °C ≤ Ta ≤ +60 °C (AC-Mod.)

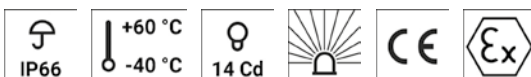
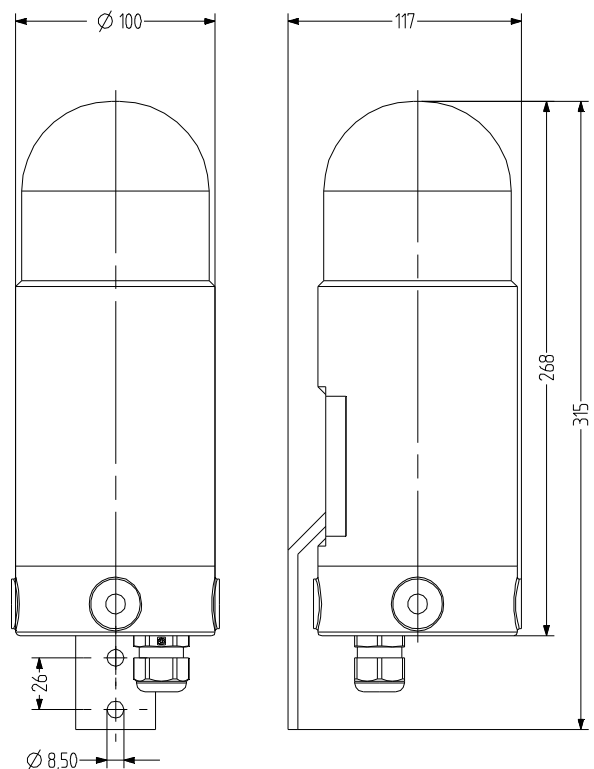
-40 °C ≤ Ta ≤ +65 °C (DC-Mod.)

Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	Ø 103 mm, Polycarbonate black (RAL 9005)
Lens	Polycarbonate, clear
Type of mounting	Bracket for wall mounting, V4A, any
Cable entry	Cable gland M20 × 1.5, 2× blind plugs M20 × 1.5
Connection technology	bis 2,5 mm ²
Beacon type	LED steady beacon, LED flashing beacon, LED strobe beacon or LED all-round light
Light source	LEDs
Luminous intensity	14 Cd (rot)
Duty cycle	100 %
Operating temperature	-40 °C / +60 °C
Degree of protection	IP66
Weight	2,5 kg



mDD

ORDER DATA

Type	Lens colour	Colour	Nominal voltage	Voltage range (V)	Nominal current (A)	Order number
mDD1	clear	red	230 V AC	+/- 20 %	0,035-0,047	336 002 413
		white	230 V AC	+/- 20 %	0,037-0,055	336 004 413
		blue	230 V AC	+/- 20 %	37-55	336 005 413
		green	230 V AC	+/- 20 %	0,037-0,055	336 006 413
		yellow	230 V AC	+/- 20 %	0,035-0,047	336 007 413
mDD2	clear	red	24 V DC	+/- 20 %	0,24-0,85	336 002 005
		white	24 V DC	+/- 20 %	0,32-1,28	336 004 005
		blue	24 V DC	+/- 20 %	0,31-1,25	336 005 005
		green	24 V DC	+/- 20 %	0,31-1,2	336 006 005
		yellow	24 V DC	+/- 20 %	0,24-0,9	336 007 005



MPL

ACCESSORIES

Type	Type of accessory	Order number
MPL	Mounting plate including explosion-proof junction box	335 500 000

mMD Explosion-proof LED multi colour beacon

- 5 signal colours and 3 operating modes, can be switched
 - steady/flashing/strobe light
- Certified for gas and dust hazardous areas of zone 2, 22
- Polycarbonate plastic housing
- Mounting bracket V4A
- Degree of protection IP 66
- Protection class II (AC) or III/II (DC)

II 3 G Ex nR IIC T6 Gc

II 3 D Ex tc IIIC T85 °C Dc

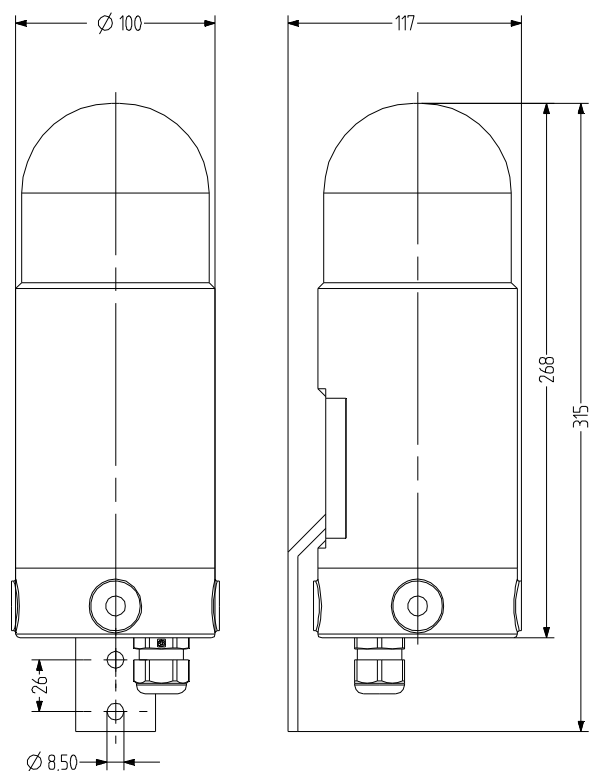
-20 °C ≤ Ta ≤ +50 °C

Zone 2, 22



TECHNICAL DATA

Housing	Ø 103 mm, Polycarbonate black
Colours	green, yellow, red, blue, clear
Lens	Polycarbonate, clear
Type of mounting	Mounting bracket, any
Cable entry	Cable gland M20 × 1.5
Connection technology	bis 2,5 mm ²
Beacon type	LED steady beacon, LED flashing beacon or LED strobe beacon
Light source	LEDs
Duty cycle	100 %
Operating temperature	-20 °C / +50 °C
Degree of protection	IP66
Weight	1,4 kg



mMD

ORDER DATA

Lens colour	Nominal voltage	Voltage range (V)	Nominal current (A)	Order number
clear	24 V DC	+/- 20 %	<0,135	337 000 005
	230 V AC	+/- 20 %	<0,050	337 000 313



MPL

ACCESSORIES

Type	Type of accessory	Order number
MPL	Mounting plate including explosion-proof junction box	335 500 000

dSF Explosion-proof Xenon strobe beacon

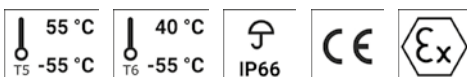
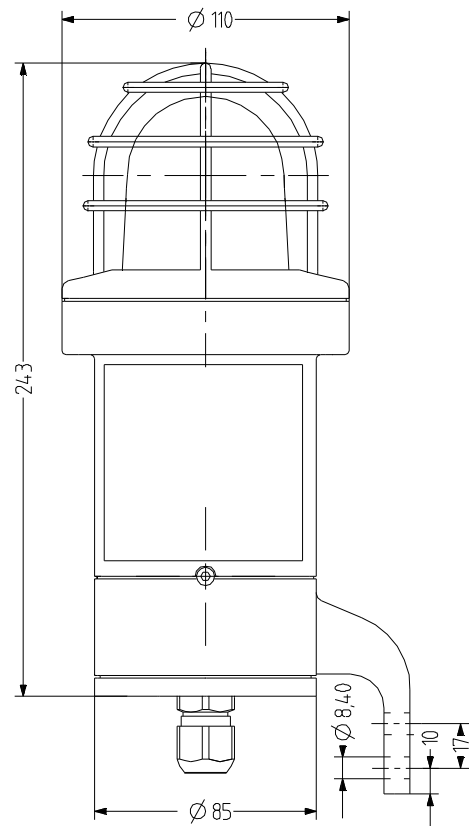
- Xenon strobe beacon with 15 J or 5 J strobe energy
- Certified for gas and dust hazardous areas of zone 1, 2, 21, 22
- Flame-proof enclosure "d"
- Terminal connection chamber "increased safety e"
- Housing made of copper-free seawater-resistant aluminium
- Hardened glass lens
- 5 lens colours
- Degree of protection IP 66, protection class I
- All models with protection cage made of stainless steel

II 2 G Ex d e IIC T5, T6 Gb
 II 2 D Ex tb IIIC T95 °C, T80 °C Db
 -55 °C ≤ Ta ≤ +55 °C T5
 -55 °C ≤ Ta ≤ +40 °C T6
 Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	Ø 110 mm, Aluminium, surface painted or powder-coated yellow/blue
Lens	tempered borosilicate glass, orange, red, clear, blue or green
Type of mounting	Bracket for wall mounting, any
Cable entry	1x cable gland M20 x 1.5, 1x sealing plug M20 x 1.5
Connection technology	1.5 mm ² fine wire and 2.5 mm ² single wire
Beacon type	Xenon strobe beacon
Light source	Xenon tube
Luminous intensity	5 J strobe energy/15 J strobe energy
Duty cycle	100 %
Service life	Light source: 5 million flashes
Operating temperature	-55 °C / +55 °C (T5) -55 °C / +40 °C (T6)
Degree of protection	IP66
Approval	PTB 03 ATEX 1230
Insulation class	I
Weight	2 kg



dSF

ORDER DATA

Type	Output	Lens colour	Nominal voltage	Voltage range (V)	Nominal current (A)	Order number	
dSF1	15 J	orange	110-120 V AC	103-127	0,135	335 001 410	
			230-240 V AC	207-253	0,200	335 001 413	
		red	110-120 V AC	103-127	0,135	335 002 410	
			230-240 V AC	207-253	0,200	335 002 413	
		clear	110-120 V AC	103-127	0,135	335 004 410	
			230-240 V AC	207-253	0,200	335 004 413	
	blue	110-120 V AC	103-127	0,135	335 005 410		
		230-240 V AC	207-253	0,200	335 005 413		
	green	110-120 V AC	103-127	0,135	335 006 410		
		230-240 V AC	207-253	0,200	335 006 413		
	5 J	orange	110-120 V AC	103-127	0,135	335 101 410	
			230-240 V AC	207-253	0,130	335 101 413	
		red	110-120 V AC	103-127	0,135	335 102 410	
			230-240 V AC	207-253	0,130	335 102 413	
		clear	110-120 V AC	103-127	0,135	335 104 410	
			230-240 V AC	207-253	0,130	335 104 413	
		blue	110-120 V AC	103-127	0,135	335 105 410	
			230-240 V AC	207-253	0,130	335 105 413	
green		110-120 V AC	103-127	0,135	335 106 410		
		230-240 V AC	207-253	0,130	335 106 413		
dSF2		15 J	orange	24 V DC	21-53	1,000	335 001 005
				80 V DC	72-132	0,250	335 001 009
	red		24 V DC	21-53	1,000	335 002 005	
			80 V DC	72-132	0,250	335 002 009	
	clear		24 V DC	21-53	1,000	335 004 005	
			80 V DC	72-132	0,250	335 004 009	
	blue		24 V DC	21-53	1,000	335 005 005	
			80 V DC	72-132	0,250	335 005 009	
	green		24 V DC	21-53	1,000	335 006 005	
			80 V DC	72-132	0,250	335 006 009	
	5 J		orange	24 V DC	21-53	0,280	335 101 005
				80 V DC	72-132	0,090	335 101 009
		red	24 V DC	21-53	0,280	335 102 005	
			80 V DC	72-132	0,090	335 102 009	
		clear	24 V DC	21-53	0,280	335 104 005	
			80 V DC	72-132	0,090	335 104 009	
		blue	24 V DC	21-53	0,280	335 105 005	
			80 V DC	72-132	0,090	335 105 009	
		green	24 V DC	21-53	0,280	335 106 005	
			80 V DC	72-132	0,090	335 106 009	



MPL

ACCESSORIES

Type	Type of accessory	Order number
MPL	Mounting plate including explosion-proof junction box	335 500 000

dMS Explosion-proof multi-tone alarm sounder

- Loud, explosion-proof electronic multi-tone alarm sounder
- Certified for gas and dust hazardous areas of zone 1, 2, 21, 22
- Flame-proof enclosure "d"
- Terminal connection chamber "increased safety e"
- 32 signal tones, 2 tones can be switched externally
- Housing made of copper-free seawater-resistant aluminium, black plastic sound protection hood
- Degree of protection IP 66
- Maximum sound pressure 115 dB (A) in 1 m
- Volume can be reduced in 3 steps of 10 dB each
- Protection class I, wide voltage range

II 2 G Ex d e IIB + H2 T6 Gb

II 2 D Ex tb IIIC T85° Db

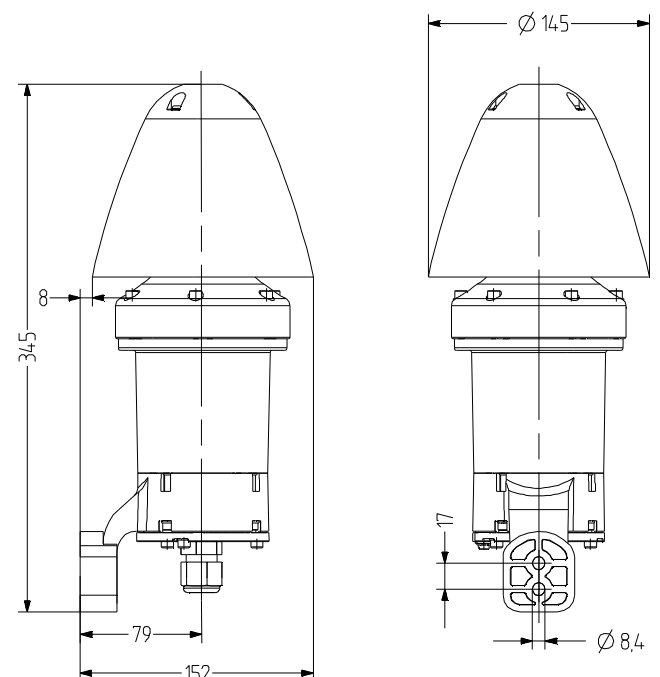
-50 °C ≤ Ta ≤ +60 °C

Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	copper-free, seawater-resistant aluminium yellow/blue, sound protection hood Polyamide black
Type of mounting	Bracket for wall mounting, Sound outlet opening at bottom
Cable entry	M20 × 1.5 (5.5–13 mm)
Connection technology	bis 2,5 mm ²
Power consumption	max. 14 W
Tone	32 Tones, 2 Tones can be switched externally, see tone table
Volume	115 dB (can be adjusted with DIP switch)
Duty cycle	100 %
Operating temperature	-50 °C / +60 °C
Degree of protection	IP66
Approval	PTB 14 ATEX 1005
Insulation class	I
Weight	2,8 kg



dMS

ORDER DATA

Type	Nominal voltage	Voltage range (V)	Nominal current (A)	Order number
dMS1	85-265 V AC	+/- 10 %	0,093	371 000 313
dMS2	24 V DC	+/- 10 %	0,460	371 000 005



MPL

ACCESSORIES

Type	Type of accessory	Order number
MPL	Mounting plate including explosion-proof junction box	335 500 000

mHPT Explosion-proof signal horn

- Loud, well-designed, explosion-proof electromechanical signal horn with typical horn tone
- Certified for gas hazardous areas of zone 1, 2
- Encapsulation
- Impact-resistant polycarbonate housing
- Degree of protection IP 54
- Insulation class II
- Available in all standard supply voltages
- Max. 108 dB (A) in 1 m

II 2 G Ex e mb II T5

-20 °C ≤ Ta ≤ +50 °C (AC-Mod.)

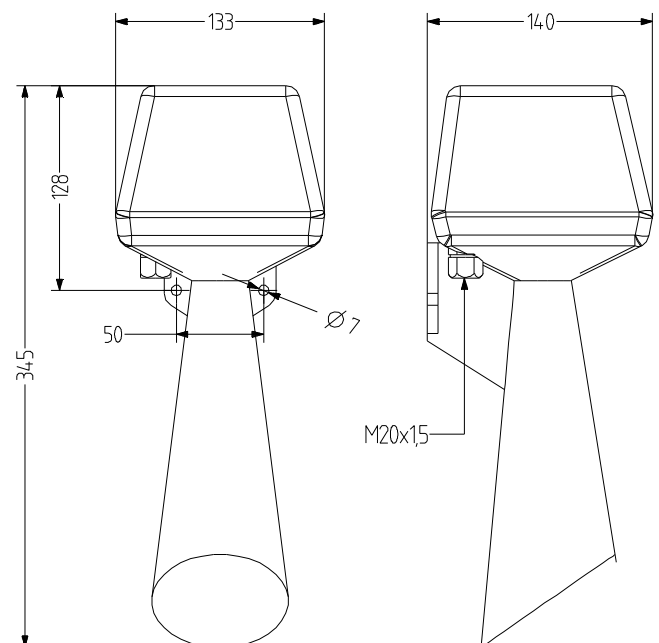
-20 °C ≤ Ta ≤ +60 °C (DC-Mod.)

Zone 1, 2



TECHNICAL DATA

Housing	Polycarbonate black (RAL 9005)
Type of mounting	Sound outlet opening at bottom
Cable entry	Cable entry M20 × 1.5
Connection technology	bis 2,5 mm ²
Tone	typical signal horn tone
Volume	108 dB
Duty cycle	75 %
Operating temperature	-20 °C / +60 °C-20 °C / +60 °C (DC) -20 °C / +50 °C (AC)
Degree of protection	IP54
Insulation class	II
Weight	500 g
Drive system	non-polarised electromagnet, tappet strikes the membranes between 100 and 120 times/sec; DC with electrical contact breaker



mHPT

ORDER DATA

Nominal voltage	Voltage range (V)	Nominal current (A)	Order number
24 V DC	+ 10 %/- 15 %	0,300	301 100 005
115 V AC	+ 10 %/- 15 %	0,150	301 100 110
230 V AC	+ 10 %/- 15 %	0,070	301 100 113



mHTG Explosion-proof signal horn

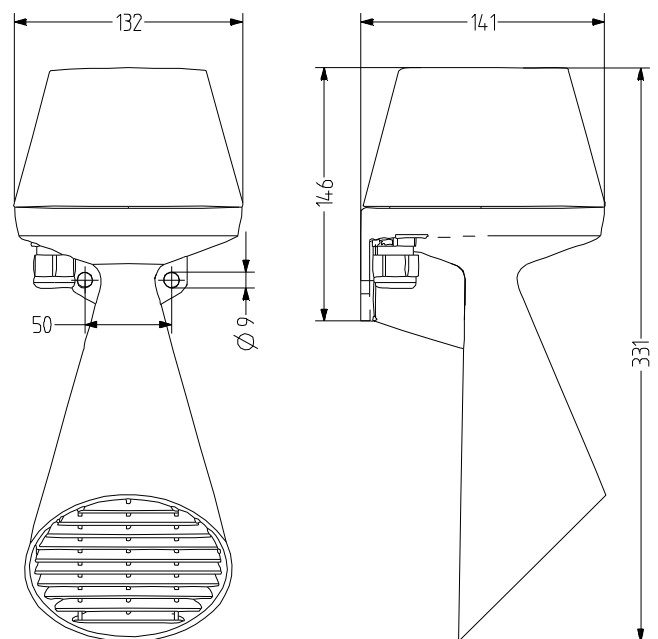
- Loud, well-designed, explosion-proof electromechanical signal horn with typical horn tone
- Certified for gas and dust hazardous areas of zone 1, 2, 21, 22
- Encapsulation
- Die-cast aluminium housing
- Weather-proof paint, resistant to seawater
- Degree of protection IP 66
- Insulation class I
- Max. 108 dB (A) in 1 m

II 2 G Ex e mb II T5
 II 2 D Ex tD A21 IP66 T90°C
 -55 °C ≤ Ta ≤ +50°C (AC-Mod.)
 -55 °C ≤ Ta ≤ +60°C (DC-Mod.)
 Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	seawater-resistant aluminium, with weather-proof paint grey
Type of mounting	Sound outlet opening at bottom
Cable entry	Cable gland M20 × 1.5
Connection technology	bis 2,5 mm ²
Tone	typical signal horn tone
Volume	max. 108 dB
Duty cycle	75 %
Operating temperature	-55 °C / +60 °C (DC) -55 °C / +50 °C (AC)
Degree of protection	IP66
Insulation class	I
Weight	2 kg
Drive system	non-polarised electromagnet, tappet strikes the membranes between 100 and 120 times/sec; DC with electrical contact breaker



mHTG

ORDER DATA

Nominal voltage	Voltage range (V)	Nominal current (A)	Order number
24 V DC	+ 10 %/- 15 %	0,300	302 100 005
230 V AC	+ 10 %/- 15 %	0,070	302 100 113



dHH Explosion-proof signal horn

- Loud, explosion-proof electromechanical signal horn with a typical horn tone
- Certified for use in gas and dust hazardous areas of zone 1, 2, 21, 22
- Flame-proof enclosure "d"
- Terminal connection chamber "increased safety e"
- Housing made of glass-fibre-reinforced plastic
- Degree of protection IP 66, max. 105 dB (A) in 1 m
- Protection class II, no equipotential bonding required
- robust design
- Model with integrated telephone-call current relay available

II 2 G Ex d e IIC T5, T6 Gb

II 2 D Ex tb IIIC T95 °C, T80 °C Db

-20 °C ≤ Ta ≤ +75 °C T5

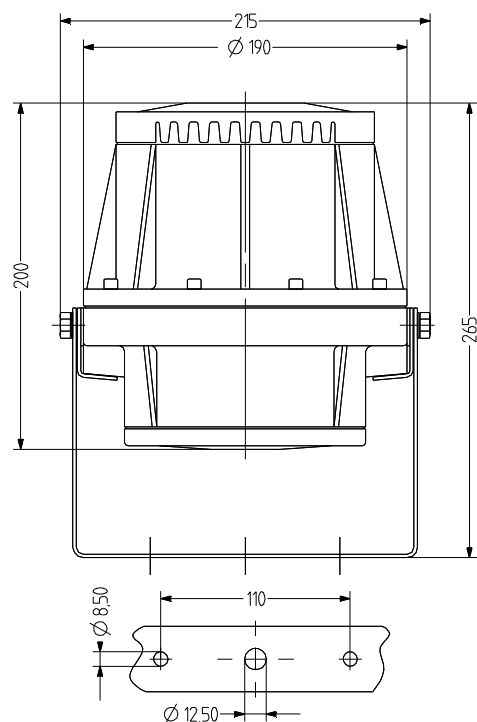
-20 °C ≤ Ta ≤ +70 °C T6

Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	Ø 190 mm, glass-fibre-reinforced polyester black (RAL 9005)
Type of mounting	any with rotatable bracket mounting, sound outlet preferably at front or bottom
Cable entry	1× cable gland M20 × 1.5, 1× sealing plug M20 × 1.5
Connection technology	1.5 mm ² fine wire and 2.5 mm ² single wire
Tone	Steady tone
Volume	max. 105 dB
Duty cycle	100 %
Operating temperature	-20 °C / +75 °C [T5] -50 °C / +70 °C [T6]
Degree of protection	IP66
Approval	PTB 01 ATEX 1133
Insulation class	II
Weight	5,5 kg



dHH**ORDER DATA**

Type	Nominal voltage	Voltage range (V)	Nominal current (A)	Telephone call current relay	Order number
dHH	12 V AC	+ 10 %/- 15 %	1,200		300 000 104
	12 V DC	+ 10 %/- 15 %	0,600		300 000 004
	24 V DC	+ 10 %/- 15 %	0,300		300 000 005
	24 V AC	+ 10 %/- 15 %	0,650		300 000 105
	42 V AC	+ 10 %/- 15 %	0,300		300 000 107
	48 V DC	+ 10 %/- 15 %	0,170		300 000 008
	48 V AC	+ 10 %/- 15 %	0,350		300 000 108
	60 V AC	+ 10 %/- 15 %	0,250		300 000 109
	60 V DC	+ 10 %/- 15 %	0,150		300 000 009
	110 V DC	+ 10 %/- 15 %	0,080		300 000 010
	110 V AC	+ 10 %/- 15 %	0,150		300 000 110
	120 V AC	+ 10 %/- 15 %	0,150		300 000 211
	220 V DC	+ 10 %/- 15 %	0,050		300 000 013
	230 V AC	+ 10 %/- 15 %	0,070		300 000 113
	240 V AC	+ 10 %/- 15 %	0,070		300 000 213
dHHR	230 V AC	+ 10 %/- 15 %	0,070	with telephone call current relay	300 100 113



dHW Explosion-proof signal bell

- Loud, explosion-proof electromechanical signal horn with a typical bell tone
- Certified for use in gas and dust hazardous areas of zone 1, 2, 21, 22
- Flame-proof enclosure "d"
- Terminal connection chamber "increased safety e"
- Housing made of glass-fibre-reinforced plastic
- Degree of protection IP 66, max. 105 dB (A) in 1 m
- Protection class II, no equipotential bonding required
- robust design
- Model with integrated telephone-call current relay available

II 2 G Ex de IIC T6

II 2 D Ex tD A21 IP66 T80°C

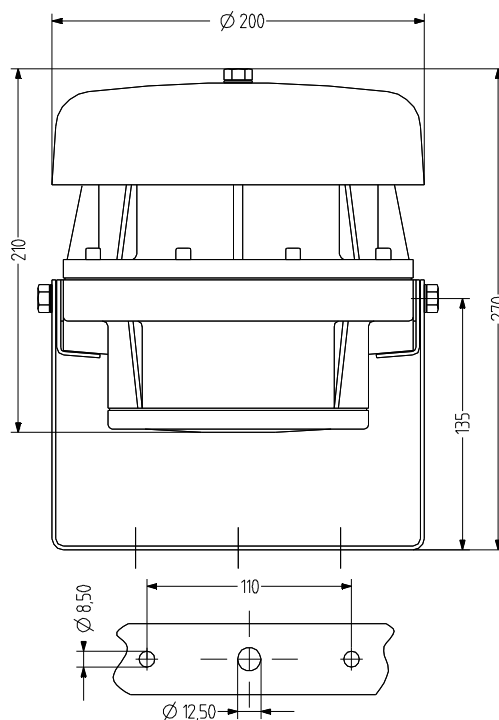
-20 °C ≤ Ta ≤ +40 °C

Zone 1, 2, 21, 22



TECHNICAL DATA

Housing	Ø 200 mm, glass-fibre-reinforced polyester black (RAL 9005)
Type of mounting	any with rotatable bracket mounting, sound outlet preferably at front or bottom
Cable entry	1× cable gland M20 × 1.5, 1× M20 × 1.5 with sealing plug
Connection technology	1.5 mm ² fine wire and 2.5 mm ² single wire
Tone	1 Tones, typical bell tone
Volume	max. 105 dB
Duty cycle	100 %
Operating temperature	-20 °C / +40 °C
Degree of protection	IP66
Approval	PTB 01 ATEX 1134
Insulation class	II
Weight	5,5 kg



dHW

ORDER DATA

Type	Nominal voltage	Voltage range (V)	Nominal current (A)	Telephone call current relay	Order number
dHW1	12 V AC	+ 10 %/- 15 %	0,600		320 000 104
	24 V AC	+ 10 %/- 15 %	0,320		320 000 105
	48 V AC	+ 10 %/- 15 %	0,300		320 000 108
	60 V AC	+ 10 %/- 15 %	0,240		320 000 109
	110 V AC	+ 10 %/- 15 %	0,140		320 000 110
	120 V AC	+ 10 %/- 15 %	0,180		320 000 211
	230 V AC	+ 10 %/- 15 %	0,055		320 000 113
	240 V AC	+ 10 %/- 15 %	0,065		320 000 213
dHW2	12 V DC	+ 10 %/- 15 %	0,600		320 000 004
	24 V DC	+ 10 %/- 15 %	0,350		320 000 005
	48 V DC	+ 10 %/- 15 %	0,300		320 000 008
	60 V DC	+ 10 %/- 15 %	0,230		320 000 009
	110 V DC	+ 10 %/- 15 %	0,130		320 000 010
	220 V DC	+ 10 %/- 15 %	0,070		320 000 013
dHWR1	230 V AC	+ 10 %/- 15 %	0,055	with telephone call current relay	320 100 113



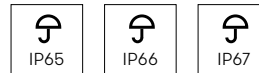
General technical information

Degrees of protection

The degrees of protection set out by standard EN 60529 provide information about the level to which electrical equipment – in our case signalling devices – is protected against the effects of solid foreign objects and against the ingress of liquid by the casing or covers.

The table below provides an overview of what the IP degree of protection numbers mean and how they are put together:

The degrees of protection are indicated by a code which always consists of the two letters 'IP' plus two numbers that represent the level of protection. The most common degrees of protection given to Auer Signal products are IP 65, IP 66 and IP 67.



First number

Protection against foreign objects

0 NO PROTECTION
No special protection stopping people directly touching active or moving parts; no protection for the equipment against the ingress of solid foreign objects

1 PROTECTION AGAINST LARGE FOREIGN OBJECTS

Protection against the ingress of solid foreign objects with a diameter of more than 50 mm, e.g. hands

2 PROTECTION AGAINST MEDIUM-SIZED FOREIGN OBJECTS

Protection against the ingress of solid foreign objects with a diameter of more than 12 mm, e.g. fingers

3 PROTECTION AGAINST SMALL FOREIGN OBJECTS

Protection against the ingress of solid foreign objects with a diameter of 2.5 mm, e.g. tools, wires

4 PROTECTION AGAINST GRANULAR FOREIGN OBJECTS

Protection against the ingress of solid foreign objects with a diameter of more than 1 mm, e.g. fine tools, small wires

Second number

Protection against liquid

0 NO SPECIAL PROTECTION

1 PROTECTION AGAINST DRIPPING WATER - FALLING VERTICALLY

Dripping water falling vertically should not have a harmful effect

2 PROTECTION AGAINST DRIPPING WATER - FALLING AT AN ANGLE

Dripping water falling at any angle up to 15 degrees to the vertical should not have a harmful effect.

3 PROTECTION AGAINST SPRAYING WATER

Dripping water falling at any angle up to 60 degrees to the vertical should not have a harmful effect

4 PROTECTION AGAINST SPLASHING WATER

Water splashing against the equipment from all directions should not have a harmful effect

5 PROTECTION AGAINST DUST DEPOSITS

Fully protected against dust deposits:
The ingress of dust is not completely ruled out, but does not impair the functionality of the device

6 PROTECTION AGAINST INGRESS OF DUST

Fully protected against the ingress of dust

5 PROTECTION AGAINST WATER JETS

A jet of water from any direction should not have a harmful effect

6 PROTECTION AGAINST FLOODING

A harmful amount of water should not enter the equipment in the event of temporary flooding

7 PROTECTION IN THE EVENT OF IMMERSION

A harmful amount of water should not enter the equipment when it is immersed in water under the specified pressure and time conditions

8 PROTECTION IN THE EVENT OF DEEP IMMERSION

A harmful amount of water should not enter the equipment when it is immersed under water

TECH-
NICAL
INFOR-
MATION

Standards and certification marks

UL CERTIFICATION

Given that Auer Signal has a global market presence, the majority of the company's signalling equipment is also certified in line with UL standards.

Plus, as a member of the 'Client Test Data Program', Auer Signal is also authorised to conduct UL-related tests in its own laboratory. UL accepts the results of such tests on a provisional basis, but then periodically repeats the tests to check the quality of the results.



UL is the locally established certification for devices specifically on the US market. Although UL certification is not a fixed requirement in particular outside of America, a user of a device with

UL certification can be sure that it meets incredibly stringent safety standards because UL has a stronger focus on safety-related aspects than European standards.

As part of UL certification, devices have to be tested by qualified testers and inspectors are sent out to device manufacturers four times a year under the scope of follow-up services to ensure that the prescribed manufacturing methods and material specifications are being upheld.

If the UL mark is preceded by the letter C, it indicates that the device has also been tested in line with the standards set out by the CSA (Canadian Standards Association) and has also been certified for use in Canada."



The list below provides an explanation of the device classifications according to UL:

Type 1

Indoor use primarily to provide protection against contact with the enclosed equipment and against a limited amount of falling dust/dirt

Type 2

Indoor use to provide a degree of protection against a limited amount of water and dust

Type 3

Outdoor use to provide a degree of protection against windblown dust and rain; the device is undamaged by the formation of ice on the enclosure

Type 3R

Outdoor use to provide a degree of protection against rain; the device is undamaged by the formation of ice on the enclosure

Type 4

Either indoor or outdoor use to provide a degree of protection against rain, splashing water and hose-directed water; the device is undamaged by the formation of ice on the enclosure

Type 4X

Either indoor or outdoor use to provide a degree of protection against rain, splashing water and hose-directed water; the device is undamaged by the formation of ice on the enclosure; resists corrosion

Type 6

Indoor or outdoor use to provide a degree of protection against entry of water during temporary submersion/flooding at a limited depth; the device is undamaged by the external formation of ice on the enclosure

Type 12

Indoor use to provide a degree of protection against dust, dirt, fibre flyings, dripping water and external condensation of non-corrosive liquids

Type 13

Indoor use to provide a degree of protection against lint, dust seepage, external condensation and spraying of water, oil and non-corrosive liquids

CE MARKING

The CE marking is the manufacturer's declaration – in the form of a conformity declaration – that the product meets all of the applicable European directives and the safety requirements contained within them.



ATEX

The ATEX logo indicates that a product is permitted for use in potentially explosive atmospheres in accordance with the European ATEX Directive. The product itself has a test number and detailed information about the certification on its label.

AS INTERFACE

The AS-INTERFACE logo shows that a product can be integrated into an AS-Interface fieldbus system.

Explosion-proof devices provide protection in atmospheres with flammable gases, vapours, mists or dusts.

Auer Signal developed its first explosion-proof signalling equipment more than a quarter of a century ago.

The company's product portfolio includes visual, visual-audible and audible signalling equipment that is explosion-proof, and explosion-proof telephones have been sold with success on the global market for over 25 years now.

ABOUT EXPLOSION PROTECTION

Flammable gases, vapours, mists and dusts are formed within the chemical and petrochemical industry, i.e. from the extraction to the processing of crude oil and natural gas, as well as in many other industrial sectors that work with the production, processing, transportation or storage of flammable gases, liquids and dusts. These substances mix with oxygen in the atmosphere, creating a potentially explosive atmosphere. In the event of ignition, explosions could be caused, which might result in serious injury to people and damage to property.

As a general rule, three elements are required for an explosion to be caused –these are depicted in the internationally recognised explosion triangle symbol:



EXPLOSION-PROOF SIGNALLING EQUIPMENT

If an industry is working with a potentially explosive atmosphere, all potential sources of ignition need to be identified and switched off. As a standard signal beacon could trigger an explosion in a potentially explosive atmosphere should a fault occur, only special explosion-proof signalling equipment (Ex devices) should be used in this type of atmosphere. The obvious

assumption that an explosion-proof signalling device would be protected from the consequences of an explosion is incorrect. In actual fact, the explosion-proof signalling device should not act as a source of ignition in the event of a fault and therefore not cause an explosion outside of the explosion-proof device.

REGULATIONS FOR EXPLOSION-PROOF SIGNALLING EQUIPMENT

Relevant protective regulations are in place to prevent the risk of explosions. These come in the form of laws, directives and standards, all of which guarantee high safety standards. With Directive 94/9/EC, the EU laid down the ATEX Directive (currently 2014/34/EU), which is derived from the French '*atmosphère explosible*' and now brings together all of the different regulations that existed previously.

CERTIFICATION OF EXPLOSION-PROOF SIGNALLING EQUIPMENT

Explosion-proof signalling equipment that complies with the ATEX Directive has to be tested and certified by independent authorities and testing institutes (e.g. PTB Braunschweig, DMT Essen, etc.) before it is manufactured and sold.

DESIGNATION AND CLASSIFICATION OF EXPLOSION-PROOF SIGNALLING EQUIPMENT

Below you will find an overview of the designations for the classification of typical explosion-proof signalling equipment from Auer Signal along with an explanation of the meanings behind them:

Potentially explosive atmospheres – dust

Labelling of electrical equipment as per

EC Directive 2014/34/EU – ATEX

CE 0102  II 2D tD T80 °C

1

2

3

4

5

1



COMPLIANCE WITH
EU DIRECTIVE(S)

5

T80 °C

MAXIMUM PERMITTED
SURFACE TEMPERATURE

2

0102

OFFICIAL TESTING
AUTHORITY

testing authority	Country	Identification number
TÜV-A	Austria	0408
PTB	Germany	0102
EXAM	Germany	0158

CLASSES AND GROUPS ACCORDING TO NEC
500: TYPICAL DUSTS, LINT, FIBRES

Class II	Class III
Metal dust/Group E	
Coal dust/Group F	Fibres/lint
Grain dust/Group G	

TECH-
NICAL
INFOR-
MATION

3

II 2D


CONDITIONS IN POTENTIALLY EXPLOSIVE ATMOSPHERES

Flammable substances	Temporary behaviour of the flammable substance in the potentially explosive atmosphere	Classification of potentially explosive atmospheres			Labelling required for applicable equipment according to CENELEC	
		CENELEC/IEC	US NEC 505	US NEC 500	Device group	Device category
Dusts	Present continuously, for long periods or frequently	Zone 20	---	Class II Division 1	II	1D
	Occur occasionally	Zone 21	---		II	2D (or 1D)
	Not likely to occur – if so, infrequently or for a short period only	Zone 22	---		II	3D (or 2D or 1D)
Dust	---	Mining Mining	---	Mining ---	I I	M1 M2 (or M1)

4

tD

TYPES OF IGNITION PROTECTION

Type of ignition protection	Symbol	Labeling	Protection principle	Zone	CENELEC IEC FM/UL	Application
General requirements				All Class II, Div. 1/2	IEC 61241-0 UL 1604	All applications
Protection by enclosure		tD	Potentially explosive atmosphere is kept away from the source of ignition; there is a limit on the temperature.	20, 21 oder 22 20, 21 oder 22 Class II, Div. 1	EN 50281-1-1 IEC 61241-1-1 UL 1203	Control, command and signalling equipment, beacons, engines, junction boxes, enclosure
Pressurised enclosure		pD	Potentially explosive atmosphere is kept away from the source of ignition.	21 or 22 21 or 22 Class II, Div. 1/2	EN 50281-4 IEC 61241-2 NFPA 496	Switch and control cabinets, engines, measurement and analysis equipment, computers
Intrinsic safety		iD	Energy limitation of sparks and temperatures	20, 21 or 22 20, 21 or 22 Class II, Div. 1	EN 50281-5 IEC 61241-11 FM 3610/UL 913	Measurement and control technology, sensors, actuators, instrumentation
Special encapsulation		mD	Potentially explosive atmosphere is kept away from the source of ignition.	20, 21 or 22 20, 21 or 22 ---	EN 50281-6 IEC 61241-18	Relay and engine coils, electronics, solenoid valves, connection systems
Non-incendive		[NI]	Prevention of sparks and temperatures	Class II, Div. 1	FM 3611/UL 1604	
Dust-proof			Transferral of explosion outside not possible	Class II, Div. 2	FM 3611/UL 1604	

Potentially explosive atmospheres – gas

Labelling of electrical equipment
as per EC Directive 94/9 – ATEX

CE 0102 **Ex** II2G EEx de IIC T6

1 2 3 4 5 6 7 8

1 **CE** COMPLIANCE WITH
EU DIRECTIVE(S)

4 **E** AS PER DIRECTIVE 94/9/EG
(ATEX)

2 **0102** OFFICIAL TESTING
AUTHORITY

5 **Ex** EXPLOSION-PROOF EQUIPMENT

testing authority	Country	Identification number
TÜV-A	Austria	0408
PTB	Germany	0102
EXAM	Germany	0158

3 **II2G** CONDITIONS IN POTENTIALLY EXPLOSIVE ATMOSPHERES

Flammable substances	Temporary behaviour of the flammable substance in the potentially explosive atmosphere	Classification of potentially explosive atmospheres			Labelling required for applicable equipment according to CENELEC	
		CENELEC / IEC	US NEC 505	US NEC 500	Device group	Device category
Gases, vapours	Present continuously, for long periods or frequently	Zone 0	Class I Zone 0	Class I Division 1	II	1G
	Occur occasionally	Zone 1	Class I Zone 0		II	2G (or 1G)
	Not likely to occur – if so, infrequently or for a short period only	Zone 2	Class I Zone 0	Class I Division 2	II	3G (or 2G or 1G)
Methane	---	Mining Mining	---	Mining ---	I I	M1 M2 (or M1)

8 **T6** TEMPERATURE CLASSES AND MAXIMUM PERMITTED SURFACE TEMPERATURE OF EQUIPMENT ACCORDING TO CENELEC/IEC/NEC 505 UND NEC 500





450° C	T1						
300° C		T2					
200° C			T3				
135° C				T4			
100° C					T5		
85° C						T6	
0° C							
CENELEC	T1	T2	T3	T4	T5	T6	
IEC							
NEC 505							

CLASSES AND GROUPS ACCORDING TO NEC 500: TYPICAL GASES

Class I	Mining
Acetylene/Class A	
Hydrogen/Class B	Methane
Ethylene/Class C	
Propane/Class D	

6

de TYPES OF IGNITION PROTECTION

Type of ignition protection	Symbol	Labeling	Protection principle	Zone	CENELEC IEC FM/UL	Application
General requirements				all	EN 60079-0 IEC 60079-0 FM 3600/UL 2279	all
Flame-proof enclosure		EEx d Ex d AEx d	Transferral of explosion outside not possible	1 or 2 1 or 2	EN 50018 IEC 60079-1 FM 3615/UL 2279	Control, command and signalling equipment, control systems, engines, power electronics
Increased safety		EEx e Ex e AEx e	Prevention of sparks and temperatures	1 or 2 1 or 2 Class 1, Zone 1	EN 50019 IEC 60079-7 FM 3600/UL 2279	Junction boxes, enclosure, engines, beacons, terminals
Intrinsic safety		EEx i Ex i [IS]	Energy limitation of sparks and temperatures	0, 1 oder 2 0, 1 oder 2 Class I, Div. 1	EN 50020, EN 50039 IEC 60079-11 FM 3610/UL 2279	Measurement and control technology, sensors, actuators, instrumentation
Pressurised enclosure		EEx p Ex p	Potentially explosive atmosphere is kept away from the source of ignition.	1 or 2 1 or 2 Class I, Div. 1/2	EN 50016 IEC 60079-2 FM 3620/NFPA 496	Switch and control cabinets, engines, measurement and analysis equipment, computers
Special encapsulation		EEx m Ex m AEx m	Potentially explosive atmosphere is kept away from the source of ignition.	1 or 2 1 or 2 Class I, Zone 1	EN 50028 IEC 60079-18 FM 3600/UL 2279	Relay and engine coils, electronics, solenoid valves, connection systems
Oil filled		EEx o Ex o AEx o	Potentially explosive atmosphere is kept away from the source of ignition.	1 or 2 1 or 2 Class I, Zone 1	EN 50015 IEC 60079-6 FM 3600/UL 2279	Transformers, relays start-up controllers, control systems
Sand filled		EEx q Ex q AEx q	Transferral of explosion outside not possible	1 or 2 1 or 2 Class, Zone 1	EN 50017 IEC 60079-5 FM 3600/UL 2279	Transformers, relays, capacitors
Type of ignition protection 'n'		EEx n Ex n AEx n	Different protection principles for Zone 2	2 2 Class I, Zone 2	EN 50021 IEC 60079-15 FM 3600	Only Zone 2 applications
Non-incendive		[NI]	Prevention of sparks and temperatures	-- -- Class I, Div. 1	-- -- FM 3611/UL 1604	
Explosion-proof		[XP]	Transferral of explosion outside not possible	-- -- Class I, Div. 1	-- -- Class I, Div. 1	
Optical radiation		Eex op Ex op	Limit, prevent, etc., transfer of energy from optical radiation	1 or 2 1 or 2	EN 60079-28 IEC 60079-28	Optoelectronic devices, e.g. with optical waveguide

TECH-
NICAL
INFOR-
MATION

7

IIC CLASSIFICATION PER CENELEC/IEC/NEC 505, EXPLOSION SUB-GROUP GASES AND VAPOURS

	T1	T2	T3	T4	T5	T6
I	Methane	--	--	--	--	--
IIA	Ammonia Methane Ethane Propane	Ethyl alcohol Cyclohexan n-Butane n-Hexane	Fuels in general Jet fuel Heating oils	Acetaldehyde	--	--
IIB	Town gas Acrylonitrile	Ethylene Ethylene oxide	Ethylene glycol Hydrogen sulphide	Ethyl ether	--	--
IIC	Hydrogen	Ethyne (acetylene)	--	--	--	Carbon disulphide