

ET 2005	ET 200M	ET 200SP	CENELEC	FM	Temperature
II 3 G EX nA II T4/T5	II 3 G EX nA II T4/T5	II 2 G (1) GD EX d e [a/b] IIC/II B T4	Class I Division 2 Groups A, B, C, D, T4/T5	Class I Division 2 Groups A, B, C, D, T4/T5	-20 °C to +60 °C
II 3 G EX nA II T4/T5	II 3 G EX nA II T4/T5	II 2 G (1) GD EX d e [a/b] IIC/II B T4	Class I Division 2 Groups A, B, C, D, T4/T5	Class I Division 2 Groups A, B, C, D, T4/T5	0 °C to +60 °C
II 3 G EX nA II T4/T5	II 3 G EX nA II T4/T5	II 2 G (1) GD EX d e [a/b] IIC/II B T4	Class I Division 2 Groups A, B, C, D, T4/T5	Class I Division 2 Groups A, B, C, D, T4/T5	0 °C to +60 °C

- Bit-modular and flexible structure
 - Installed directly in Zone 1 or Z1 – actuators and sensors can even be installed in Zone 0 or Z0
 - "Independent wiring": completely pre-wired configuration and easy replacement of modules since no rewiring required
 - Integration of HART field devices with transparent access
 - "Hot swapping": Replacement of electronic modules during operation
 - Full on-line expandability (configuration in run mode – CIR)
 - Redundancy of PROFIBUS and power supply
- SIMATIC ET 2005**
- Bit-modular and flexible structure
 - Installation in Zone 2
 - Independent wiring
- SIMATIC ET 200M**
- Modular, with a high number of channels
 - Installation in Zone 2
 - Integration of HART field devices with transparent access
- The right solution for every application in Zone 2 – extended temperature range from -20 °C to +60 °C and even in Zone 1.

In the field of automation, Siemens is developing trendsetting distributed solutions for hazardous areas. These solutions use SIMATIC® ET 200 systems, which can be integrated quickly and easily in any controller system via PROFIBUS, which permits system-wide communication in the process industry. Unbound to mainstream and outboard. Uniform parameter assignment with SIMATIC STEP 7 enables optimum integration in the SIMATIC PCS 7 process control system. Rugged design makes the ET 200 highly reliable and extensive diagnostics functions ensure disturbance-free operation.



Flexible and economical – Distributed solutions for the process industry

The new certification numbers in accordance with the ATEX guideline

Until recently, the certification numbers of the testing centers were shown as follows:

PTB No. Ex-85.B.2128X

- special conditions
- serial no. of certification
- generation of standards
- year of test
- explosion-proof equipment
- authorized center

In accordance with the ATEX guideline, they will now have the following form:

PTB 97 ATEX 2128X

- special conditions
- serial no. of certification according to 94/4/EC guideline
- year of test
- authorized center

The CE mark



Electrical apparatuses must meet the respective requirements stipulated within the EU. If those requirements are met, the device manufacturer can add the CE mark to the respective device. Any violation in this regard is a punishable offence.

According to the ATEX guideline, the number of the notified center that carried out the QA system acceptance test is added to this mark when referring to explosion protection.

For example, 0102 stands for the PTB testing center in Brunswick, Germany, 0158 for DMT(BVS) in Bochum, Germany, and 0344 for KEMA in Arnhem, Netherlands.

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Info-Service ADIZ 918

- Yes, I would like to know more about solutions for hazardous areas.
- Please call me to arrange a meeting.

Company
Name
Customer no.
Street
City/ZIP code/Country
Telephone
Fax
E-mail

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The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

Hazardous areas completely under control An overview of the standardizations



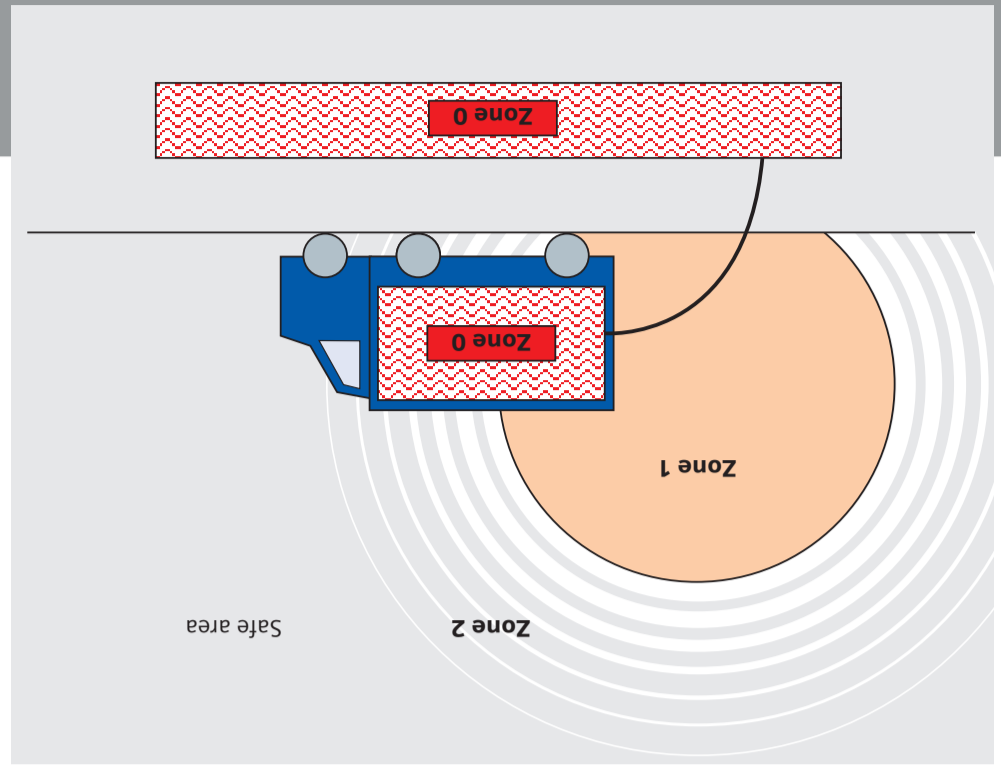
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ET 200



Safety is the top priority

Safety is the top priority wherever flammable substances are produced, processed, transported, or stored – especially in chemical and petrochemical plants, at petroleum and natural gas production sites, and in the mining industry. To ensure the highest level of protection possible in these industries, the legislative authorities of most states developed respective requirements in the form of laws, regulations, and standards. During the period of globalization, great progress has been made in regard to standardized guidelines for explosion protection. The European Union is leading the way: Guideline 9/4/EC laid the foundations for a complete standardization. As per July 1, 2003 every new device requires an approval according to this guideline.



- safe area
- Zone 0 permanently or frequently hazardous or hazardous over long periods
- Zone 1 occasionally hazardous
- Zone 2 rarely or temporarily hazardous



CLASSIFICATION OF HAZARDOUS AREAS		
	Constant or occasional hazard	Rare or temporary hazard
USA NEC 500 Class I (gas) Class II (dust) Class III (fibers)	Division 1	Division 2

CLASSES AND GROUPS ACCORDING TO NEC 500		
Typical types of gas/dust/lint/fiber	Group	
Acetylene	Class I	Group A
Hydrogen	Class I	Group B
Ethylene	Class I	Group C
Propane	Class I	Group D
Methane	Mining	
Metal dust	Class II	Group E
Coal dust	Class II	Group F
Particle dust	Class II	Group G
Fibers/lint	Class III	

TEMPERATURE CLASSES	
Maximum surface temperature	USA (NEC 500)
450 °C	T1
300 °C	T2
280 °C	T2A
260 °C	T2B
230 °C	T2C
215 °C	T2D
200 °C	T3
180 °C	T3A
165 °C	T3B
160 °C	T3C
135 °C	T4
120 °C	T4A
100 °C	T5
85 °C	T6

	NEC 500	Class I	Division 2	Groups A, B, C, D	T4
	NEC 505	Class I	Zone 1	AEx	ib [ib/ia] de IIC T4
	IEC CENELEC	Ex II 2 (1)* G <small>New marking according to ATEX</small>		Ex EEx	ib [ib/ia] de IIC T4 ib [ib/ia] de IIC T4

TYPES OF PROTECTION			
Type of protection	Schematic presentation	Basic principle	Standard
General requirements		General regulations regarding type and testing of electrical apparatus designed for hazardous areas	EN 50014
Increased safety		Only valid for electrical apparatus or its parts which do not produce arcs or sparks in normal service, are resistant to excessive temperatures, and their mains voltage does not exceed 1 kV	EN 50 019 IEC 60 079-7 FM 3600 UL 2279
Flameproof enclosure		If an internal explosion occurs, the enclosure withstands the pressure and the explosion is not transmitted to the surrounding atmosphere	EN 50 018 IEC 60 079-1 FM 3600 UL 2279
Pressurization		The ignition source is enclosed by a protective gas maintained at a pressure (at least 0.5 mbar) above that of the surrounding atmosphere which is therefore not capable of ingress	EN 50016 IEC 60 079-2 FM 3620 NFPA 496
Intrinsically safe		Impermissible high temperatures, arcs, and sparks are avoided by limiting the power within the electric circuit	EN 50 020 IEC 60 079-11 FM 3610 UL 2279
Detailed explanation ia = Application in Zones 0, 1 and 2 ib = Application in Zones 1, 2 [ia] = Application of associated equipment in Zones 0, 1, 2 [ib] = Application of associated equipment in Zones 1, 2			
Oil immersion		Electrical apparatus or their parts are immersed in oil and thus separated from the explosive atmosphere	EN 50 015 IEC 60 079-6 FM 3600 UL 2279
Powder filling		The ignition source is completely surrounded by a filling material, so that any arc occurring within the enclosure will not ignite the surrounding explosive atmosphere	EN 50 017 IEC 60 079-5 FM 3600 UL 2279
Encapsulation		The ignition source is embedded in an insulating compound, thus preventing ignition of an explosive atmosphere	EN 50 028 IEC 60 079-18 FM 3600 UL 2279
Types of protection	n Zone 2 Various methods of protection are combined in this type of protection	Slightly simplified application of types of protection in Zone 2. "n" stands for "not igniting"	EN 50 021 IEC 60 079-15

EXPLOSION GROUPS ACCORDING TO CENELEC, IEC, NEC 505	
Explosion group	Typical gas
I	Methane
II A	Propane
II B	Ethylene
II C	Hydrogen

CLASSIFICATION OF GASES AND VAPORS IN EXPLOSION GROUPS AND TEMPERATURE CLASSES						
	T1	T2	T3	T4	T5	T6
I	Methane					
IIA	Acetone Ethane Ethyl acetate Ammonia Benzene (pure) Acetic acid Carbon oxide Methane Methanol Propane Toluene	Ethyl alcohol i-Amylacetat n-Butane n-Butyl alcohol	Gasoline Diesel fuel Kerosene Fuel oil n-Hexane	Acetyl aldehyde Ethyl ether		
IIB	Town gas (illuminating gas)	Ethylene				
IIC	Hydrogen	Acetylene				Carbon disulfide

ZONE CLASSIFICATION			
	Constant, long-term or frequent hazard	Occasional hazard	Rare or short-term hazard
CENELEC/IEC	Zone 0 (Zone 20 – dust)	Zone 1 (Zone 21 – dust)	Zone 2 (Zone 22 – dust)
USA NEC 505 Class I (gas)	Zone 0	Zone 1*	Zone 2

TEMPERATURE CLASSES	
Maximum surface temperature	CENELEC IEC USA (NEC 505)
450 °C	T1
300 °C	T2
200 °C	T3
135 °C	T4
100 °C	T5
85 °C	T6

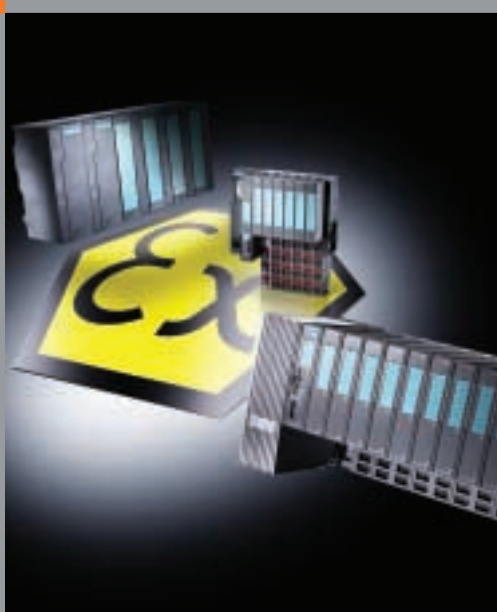
EQUIPMENT GROUP II (other hazardous areas)							
	Category 1		Category 2		Category 3		No category
Hazard level	Constant, long-term or frequent hazard		Occasional hazard		Rare or short-term hazard		No hazard
Application in	Zone 0	Zone 20	Zone 1	Zone 21	Zone 2	Zone 22	Safe area
Atmosphere G = gas, D = dust	G	D	G	D	G	D	

EQUIPMENT GROUP I (Mining)		
	Category M1	Category M2
Hazard level	Constant, long-term or frequent hazard	Occasional hazard

*II (1) G = The information in brackets refers to the associated device; in this case: associated electrical apparatus - installation in Category 1

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