



# ATEX Information

# Hazardous area application – We aim to excel

Weidmüller have been leading suppliers of electrical connection technology to industry worldwide for over 50 years. In this time we have developed a reputation for innovation, quality and reliability second to none, working closely with customers on application solutions across a truly international network of sales organisations.

Of course, we are always striving to find even better, more efficient ways to further connection technology and improve our service to customers. We achieve this through concentrating on our four core values Customers, Quality, Innovation, Employees.

As our slogan states “when good enough just isn’t good enough”, we will never be satisfied with the bare minimum. We aim to excel. And this is all areas of product and service, from signal conditioning modules to hazardous area enclosures, from power supplies to the cutting edge in insulation displacement technology for rail mounted terminals.



## Presence

We are represented in over sixty countries worldwide by wholly owned Weidmüller sales organisations and dedicated representatives. This presence allows us to serve the requirements of the largest global corporations and projects whilst still managing customer relationships at a local level. For the optimisation of an ethylene plant or increased extraction rates within oil exploration, the needs are the same:

Reliability and efficiency – leading to a reduction of waste material, an increase in capacity utilisation and a safer operation.

What these industries can never escape from, however, is the fact that the processing of chemicals, oil and gas is an inherently dangerous activity. Weidmüller treat this with the utmost respect.

## ATEX 95

ATEX 95, formerly known as ATEX 100a, is aimed at manufacturers. It applies to equipment and protective devices intended for use in potentially explosive atmospheres. Safety and controlling devices for use outside the hazardous area, but essential for the safe operating of equipment inside it are also covered.

The Directive relates to electrical as well as mechanical equipment and applies to gases, vapours and dust atmospheres. Compliance has been compulsory since 1 July 2003.

# 94/9/EC – ATEX 95 Main Issues

## Zones of use

Since 1 July 2003, equipment for use in zone 0 must conform to the requirements of Category 1 in accordance with ATEX 95 and ATEX 137. Equipment for use in zone 1 and zone 2 must

comply with category 2 and category 3 respectively. Several methods may be used to make equipment safe for use in an explosive atmosphere. The table below gives an overview of the available concepts and their principles.

## Electrical equipment for gases, vapours and mists (G)

Type of Protection	Symbol	Category	CENELEC	Basic concept of protection
Increased Safety	e	M2 & 2	EN 50019	No arcs, sparks or hot surfaces
Non-Sparking	nA	3	EN 50021	
Flameproof	d	M2 & 2	EN 50018	Contain the explosion, prevent flame propagation
Enclosed Break	nC	3	EN 50021	
Quartz/Sand Filled	q	2	EN 50017	
Intrinsic Safety	ia	M1 & 1	EN 50020/39	Limit the energy of the spark and the surface temperature
Intrinsic Safety	ib	M2 & 2	EN 50020/39	
Energy Limitation	nL	3	EN 50021	
Pressurised	p	2	EN 50016	Keep flammable gas out
Restricted Breathing	nR	3	EN 50021	
Simple Pressurisation	nP	3	EN 50021	
Encapsulation	m	2	EN 50028	
Encapsulation (Cat 1)	ma	1	EN 50284	
Oil Immersion	o	2	EN 50015	
Category 1G	–	1	EN 50284	Two independent methods of protection
Category M1	–	M1	EN 50303	–

## EC Directives

Free movement of goods is a cornerstone of the single European market. The mechanisms in place to achieve this aim are based on prevention of new barriers to trade, mutual recognition and technical harmonisation. The “New Approach” directives are based on the following principles:

- Harmonisation is limited to Essential Health and Safety Requirements (EHSR)
- Only products fulfilling the EHSR may be placed on the market and put into service
- Harmonised standards which are transposed into national standards, are presumed to conform to the corresponding EHSR

- Application of harmonised standards or other technical specifications remain voluntary, and manufacturers are free to choose any technical solution that provides compliance with the EHSR
- Manufacturers may choose between different conformity assessment procedures provided for in the applicable directive

Equipment that complies with the new Directives may carry the CE mark. The two Directives concerned with hazardous areas are called the ATEX 95 and ATEX 137.

**ATEX** is an abbreviation from the French ‘**AT**mosphères **EX**plosibles’.

# 94/9/EC - ATEX 95 Main Issues

## Hazardous area classification

CENELEC Class. IEC60079-10	Existence of potentially explosive atmosphere	Equipment Category	US Classification NEC 500	Flammable Medium
Zone 0 Zone 20	A place in which an explosive atmosphere is present continuously, for long periods or frequently.	1G 1D	Class I, Div 1 Class II, Div 1	Gases, Vapours Dust
Zone 1 Zone 21	A place in which an explosive atmosphere is likely to occur atmosphere is likely to occur.	2G 2D	Class I, Div 1 Class II, Div 1	Gases, Vapours Dust
Zone 2 Zone 22	A place in which an explosive atmosphere is not likely to occur in normal operation but, if it does occur, will persist for a short period only.	3G 3D	Class I, Div 2 Class II, Div 2	Gases, Vapours Dust

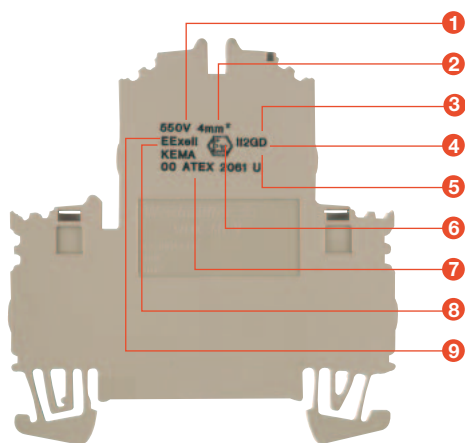
## Temperature classes

Max Surface Temperature (°C)	450	300	280	260	230	215	200	180	165	160	135	120	100	85
Temperature Class CENELEC	T1	T2	-	-	-	-	T3	-	-	-	T4	-	T5	T6
Temperature Class NEC500-3	T1	T2	T2A	T2B	T2C	T2D	T3	T3A	T3B	T3C	T4	T4A	T5	T6

## Gas groups

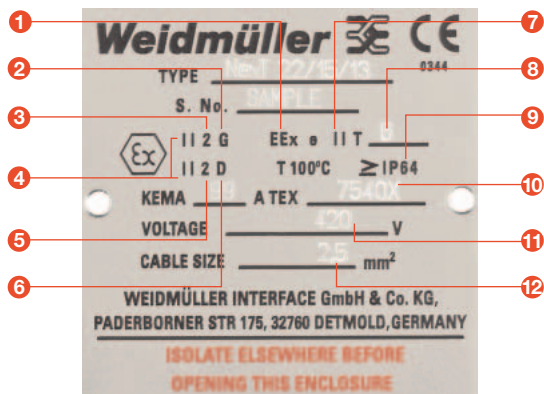
Gas (eg) CENELEC NEC 500	Propane	Ethylene	Hydrogen	Acetylene	Methane (mining)
	IIA	IIB	IIC	IIC	I
	D	C	B	A	Mining (MSHA)

## Marking examples



### Rail mounted terminal WDK 4N V

- 1 Rated voltage
- 2 Rated conductor cross section
- 3 Equipment Group II non-mining (gases, steam, vapour, dust)
- 4 Equipment category 2 – Zone 1 or 21 applications
- 5 Suitable for Gas 'G' and Dust 'D' applications
- 6 European hazardous area symbol
- 7 Certificate Number
- 8 CENELEC protection class 'e' – increased safety
- 9 Equipment Group II – non-mining (gases, steam, vapour, dust)



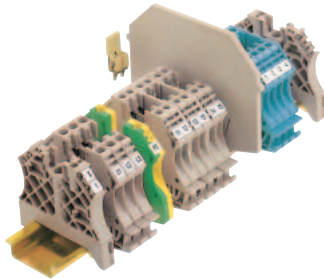
### Increased safety enclosure assembly

- 1 CENELEC protection class – 'e' increased safety
- 2 Flammable medium G – Gas
- 3 Equipment Category 2, Applications in Zone 1
- 4 Equipment Group II – non-mining
- 5 Equipment Category 2, Applications in Zone 21
- 6 Flammable medium D – Dust
- 7 Equipment Group II
- 8 Temperature Class T6, Maximum surface temperature without causing dust ignition 100 °C
- 9 Minimum environmental protection to be maintained by installer  $\geq$  IP64
- 10 Certificate number
- 11 Rated voltage
- 12 Rated conductor cross section

# ATEX Products

## Terminals

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- Highly reliable electrical connectivity
- Screw clamp and screwless clamping technology
- Wemid insulation (Flammability class V0 acc. to UL 94)
- Widest choice of options and accessories

## Junction Boxes

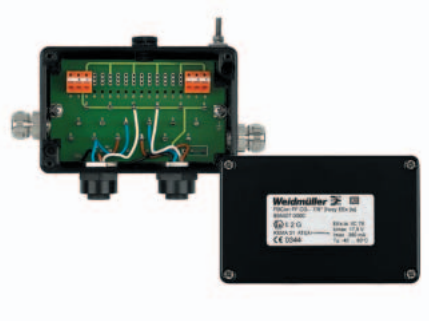
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- Electropolished stainless steel, painted sheet steel, aluminium and GRP (Glass Reinforced Polyester) enclosures suitable for ATEX applications
- Special sizes according to customer specification
- Fully assembled to customer specification in our purpose built customer specific assembly facilities

## Fieldbus Components

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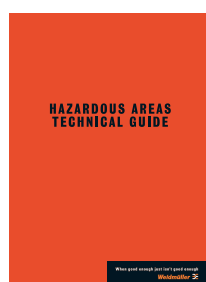
- Profibus PA and Foundation Fieldbus versions available
- More than 80.000 installations worldwide
- Field devices can be connected or disconnected without interruption to the bus system
- Intrinsically safe design for use in hazardous areas
- Low wiring costs

Of course, for all hazardous area applications there is a complementary safe control and monitoring requirement. In addition to our hazardous area products we have an extensive range of power supplies, signal conditioning, over-voltage protection, relay and opto-coupler isolation along with a host of accessories approved to international standards.

# International projects reference list

## Summarised Version

Project	Region	Project	Region
Aramco – Riyadh Refinery Upgrade	Saudi Arabia	Sakhalin Onshore	Russia
Azeri Oil Platform	Azerbaijan	SAMA 2-EH Project	Saudi Arabia
Bab Oil Development Project	Abu Dhabi	Sangachal Onshore terminal	Azerbaijan
BAPCO Refinery	Bahrain	Schiehallion FPSO Vessel	UK
Bonny Island LNG Plant	Nigeria	Shah Deniz	Caspian
Britannia Oil Platform	North Sea	Moss Gas	South Africa
BTC Pipeline (AGT)	Azerbaijan	Scorpion Minie	South Africa
CHG Project	Qatar	Shearwater Oil Platform	North Sea
Coryton Refinery	UK	Shell M3DR-A Platform	Malaysia
Deutsche Shell	Germany	Sour Gas Injection Project (SGP)	Caspian
ESSO Long Island Point Upgrade	Australia	Sriracha Refinery	Thailand
FPSO Atlantic Vessel	France	Tengizchevroil Sour Gas Injection	Caspian
Immingham Refinery	UK	Tengizchevroil Sweet Gas Dryer	Caspian
Odidi Gas Gathering Plant	Nigeria	Texaco Captain	North Sea
Phillips Jade & Judy Platform Development	North Sea	UMM Shaif Development Project	U.A.E.



If you would like to know more about the ATEX directive and the essential aspects of explosion protection, then a more comprehensive Hazardous Area Technical Guide is available. Contact your local Weidmüller sales company to receive your copy now or visit our website and place your order directly: [www.atex-products.com](http://www.atex-products.com)

Order number: 5637560000

# www.weidmueller.com

Argentina	Indonesia	Saudi Arabia
Australia	Iran	Serbia/ Montenegro
Austria	Ireland	Singapore
Bahrain	Israel	Slovakia
Belarus	Italy	Slovenia
Belgium	Japan	South Africa
Bosnia- Herzegovina	Jordan	South Korea
Brazil	Kuwait	Spain
Bulgaria	Latvia	Sweden
Canada	Lebanon	Switzerland
Chile	Lithuania	Syria
China	Luxembourg	Taiwan
Colombia	Macedonia	Thailand
Costa Rica	Malaysia	Turkey
Croatia	Morocco	Ukraine
Czech Republic	Mexico	United Arab Emirates
Denmark	Netherlands	United Kingdom
Egypt	New Zealand	USA
El Salvador	Nicaragua	Venezuela
Estonia	Norway	Vietnam
Finland	Oman	Yemen
France	Pakistan	
Germany	Panama	
Greece	Paraguay	
Guatemala	Peru	
Honduras	Philippines	
Hong Kong	Poland	
Hungary	Portugal	
Iceland	Qatar	
India	Romania	
	Russia	

Weidmüller is the leading manufacturer of components for electrical connection technology. The Weidmüller product portfolio ranges from terminal blocks, PCB connectors and terminals, protected components, Industrial Ethernet components and relay sockets to power supply and overvoltage protection modules suitable for all applications. Electrical installation and marking material, basic I/O components and a variety of tools round off the range. As an OEM supplier, the company sets global standards in the field of electrical connection technology.

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