www.zone-ex.net

Zone-Ex
engineering

Content

Impressum
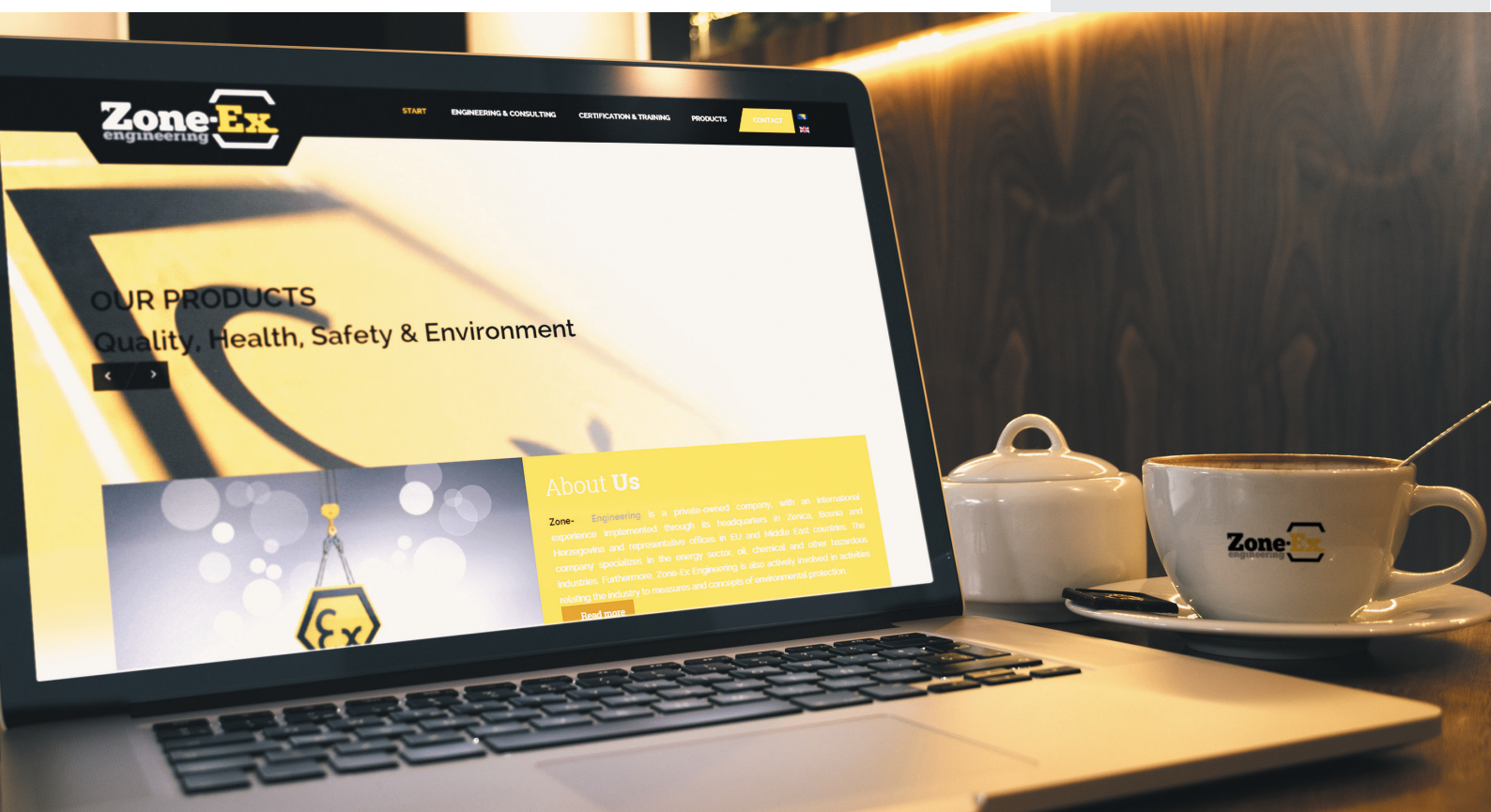
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About Us

Zone-Ex Engineering is a private-owned company, with an international experience implemented through its headquarters in Zenica, Bosnia and Herzegovina and representative offices in EU and Middle East countries. The company specializes in the energy sector, oil, chemical and other hazardous industries.

Furthermore, Zone-Ex Engineering is also actively involved in activities relating the industry to measures and concepts of environmental protection.

Engineering & consulting
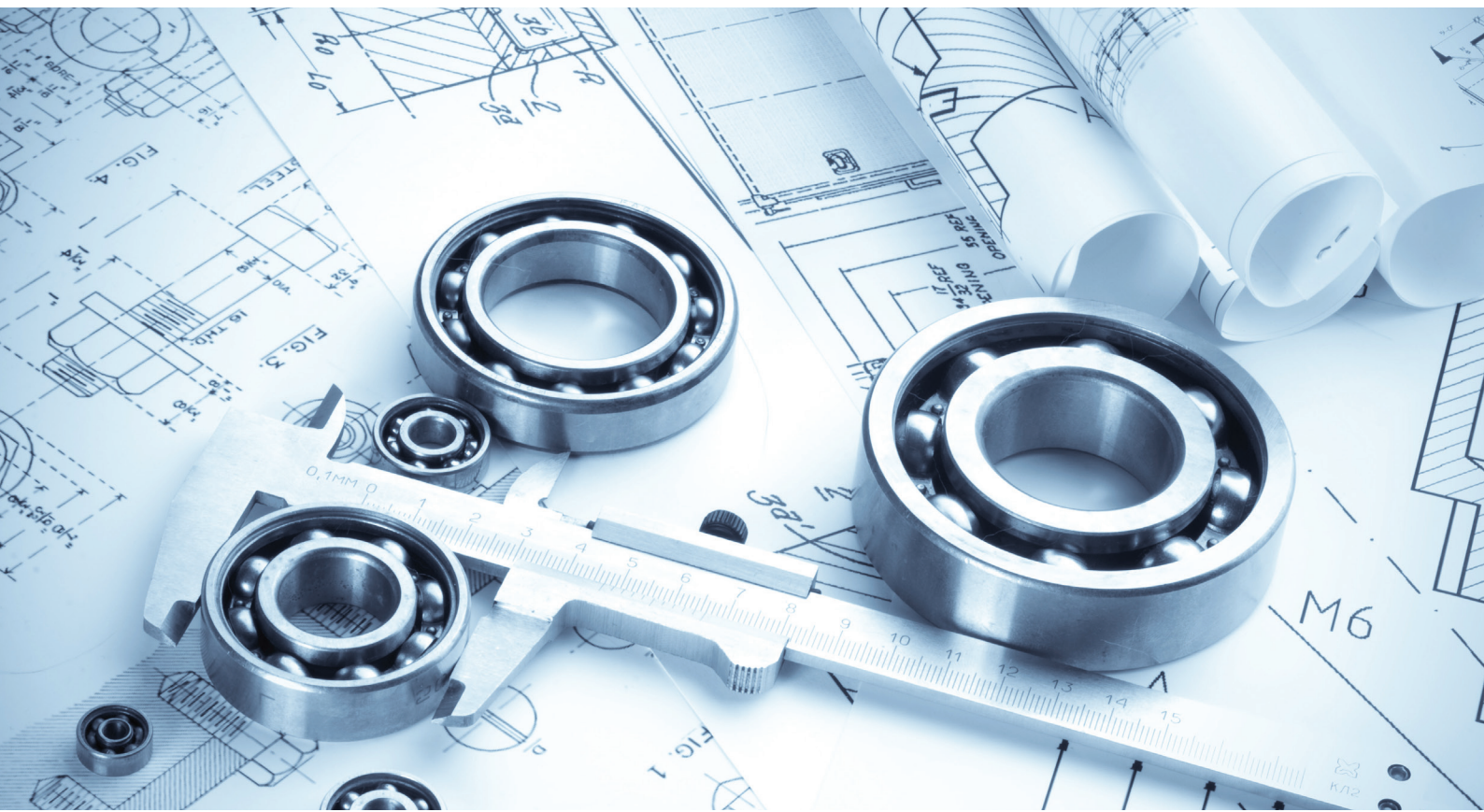
Zone-Ex Engineering covers all major engineering disciplines related to the Energy Sector. Our staff is multi-skilled in all areas of engineering and is devoted to design solutions to suit clients' individual requirements.

The Engineering and Design Department is responsible for producing a full range of documents required for project implementation, such as basic engineering documents, material requisitions, data sheets, material take-offs and drawings. Furthermore, the Engineering department supports on-site activities through preparing detailed work procedures, methods of statement and other guide documents related to site activities.

In addition to grass-root turnkey projects, our Engineering and Design department provides complete project redesign solutions. By combining experience and modern techniques, we are able to integrate new technologies with existing outdated facilities, thus providing our clients with the most economically viable solutions.

Our Consulting Services relate to environmental management systems, waste management, water resources management, environmental action plans, environmental protection and energy related studies, as well as a wide range of Feasibility Studies related to the Energy Sector. In the past we have successfully provided Consulting Services to various international corporations and national organizations such as the IFC, Federal Ministry of Environment, etc.

Activities

Our Engineering Services mainly consist of the following activities:

PROJECT MANAGEMENT
- Project Organization and Follow – up
- Budget and Cost Control
- Time Schedule Control
- Quality Assurance

BASIC AND FRONT END ENGINERING DESIGN
- Conceptual Design

DETAIL DESIGN AND ENGINEERING
- Mechanical
- Electrical
- Instrumentation
- Piping

CATHODIC PROTECTION
- Civil
- Safety

Procurement services

By applying an interdisciplinary approach the engineering services are supplemented by Procurement Services that cover the following fields:

- Equipment and Materials Supply
- Orders and Contracts
- Inspection
- Transportation, Insurance and Storage

Start-up & commissioning

In order to complete the range of services being offered as part of EPC we also include Start-up & Commissioning; services that mainly consist of the following activities:

- Pre-commissioning
- Test Runs
- Acceptance

Consulting

In cooperation with our Associates we also offer Consulting Services that are mainly focused on issues related to Energy and Environment.

- Feasibility Studies
- Environmental Assessments
- Environmental Site Assessments and Remediation Plans
- Energy and Environmental Audits
- Sustainable Development

Certification & training
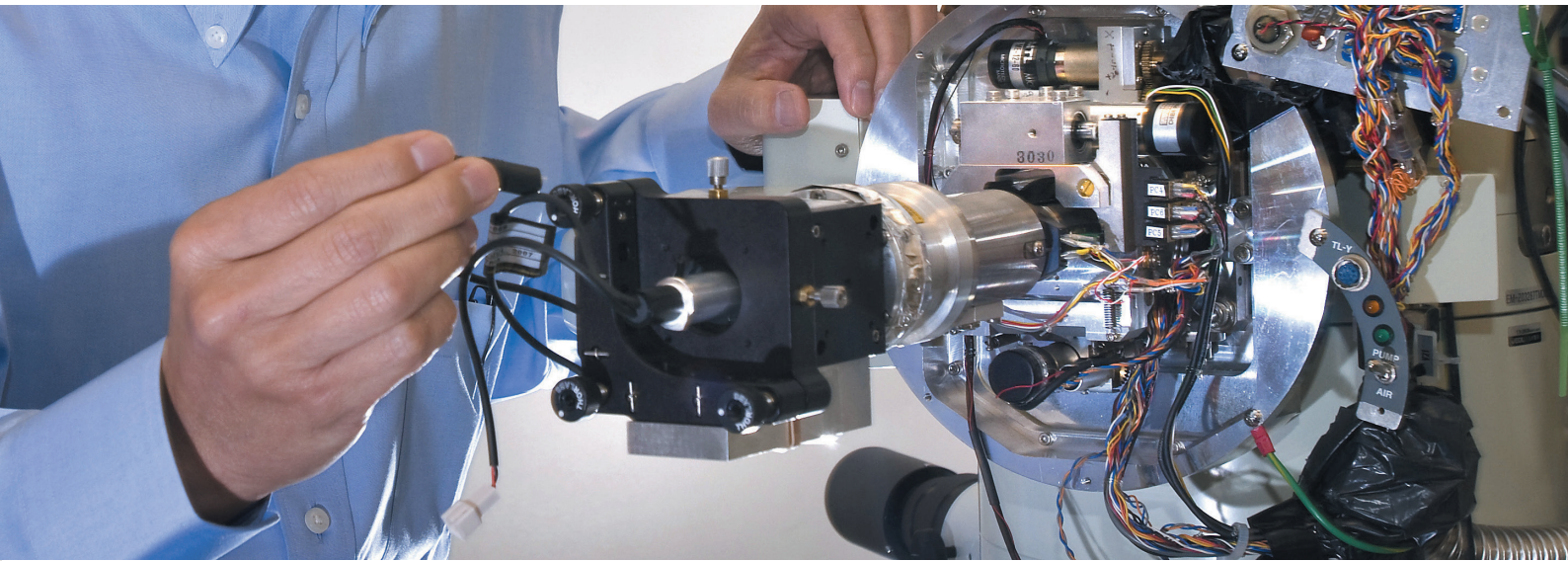
In the scope of the Directive, Zone-Ex Engineering keeps giving services of Certification, Inspection and Testing.

Moreover, Zone-Ex Engineering gives trainings in the scope of NFPA and ATEX Directives.

To reduce fire risks in explosive or flammable atmospheres, the right protective measures should be put in place. EN 60079 gives practical guidelines for the installation of electrical equipment in areas with dangerous quantities of flammable gases, vapors, mists or dusts that could lead to an explosion under normal or faulty conditions. This standard not only gives best practice recommendations for electrical safety, but also defines procedures for the maintenance, repair, reconditioning and renovation of equipment.

Our organization has accreditation by the European Union and Bosnia & Herzegovina. EN 60079-19 : Explosive atmospheres -Part 19: Equipment repair, overhaul and reclamation EN 60079-17 : Explosive atmospheres -- Part 17: Electrical installations inspection and maintenance.

The following workplaces and industries according to ATEX / NFPA Standards have been our main scope of work:

- Mining
- Oil & Gas Industries
- Military Industries
- Chemical Industries
- Other Hazardous Classified Industries

Guide for explosion protection

Equipment and products operating in hazardous areas are required to meet stringent criteria. They must be "protected" to avoid the possibility of them becoming a source of ignition. If the danger of explosion cannot be completely or only partly avoided by measures of preventing the formation of an hazardous explosive atmosphere, then measures must be taken that avoid the ignition of the explosive atmosphere.

Integrated explosion protection

PRIMARY Preventing the formation of an explosive atmosphere	SECONDARY Avoidance of the ignition of an explosive atmosphere	TERTIARY Mitigation of the effects of an explosion to an acceptable extent

Categories / Protection levers / Zones

AREAS	CATEGORIES	EPL	ZONES	EXPLOSIVE ATMOSPHERE
Mining - I	M1	Ma	/	>1,5% CH4
	M2	Mb		<1,5% CH4
Other than mines II	1G, 1G	Ga, Da	0,20	Continuosly, long term or frequently
	3G, 2D	Gb, Db	1,21	Likely to occur
	3G, 3D	Gc, Dc	2,22	Not likely to occur, short period
EPL - Equipment Protection Level	G - Gas D - Dus	a - very high protection level b - very high protection level c - extended protection level		

Mamimum surface temperature		Temp Class.	T1	T2	T3	T4	T5	T6
450C								
300C								
200C								
135C								
100C								
85C								

Gas groupos			T1	T2	T3	T4	T5	T6
	I		methane					
	IIA		ammonium, ethane, propane, benzene, methanol	ethyl, n-butanol n-butyl alcohol	benzine, kerosene, n-hexane, diesel fuel	etileter, acetilaldehid, benzaldehyde, dibuti-leter, diheksileter	-	-
	IIB		LPG mix	ethylene	hydrogen sulphide	etileter, dietileter	-	-
	IIC		hydrogen	acetylene	-	-	-	carbon disulphide

Dust Groups	
IIIA	Combustible flyings
IIIB	Non-conductive dust
IIIC	Conductive dust

Dust	Flash point [C] layer	Flash point [C] cloud	Minimum ignition energy (cloud) [mJ]	Lower Explosion Limit (cloud) [g/m3]
Cellulose	270	480	80	55
Sugar	400	370	30	45
Strach	380	400	25	25
Wheat	220	500	60	65
Sawdust	260	470	40	35
Aluminium powder	790-700	500-800	15-160	40-140
Zinc	540	690	690	460
Asphalt	550	510	510	35

Type of protection

Types of protection for explosive atmosphere of flammable gases, vapours, mists or dusts EN/IEC 60079-0 - General Requirements

Type of Protection	Standard	Concept	Symbol	Category	EPL
Flameproof	EN/IEC 60079-1		d	2G M2	Gb Mb
Increased safety	EN/IEC 60079-7		e	2G M2	Gb Mb
Pressurized	EN/IEC 60079-2		px, px, pz	M2, 2G, 3G 2D, 3D	Mb, Gb, Gc Db, Dc
Intrinsic safety	EN/IEC 60079-11		ia, ib, ic	M1, M2, 1G, 2G, 3G 1D, 2D, 3D	Ma, Mb, Ga, Gb, Gc Da, Db, Dc
Type of protection "n"	EN/IEC 60079-15		nA, nC, nR	3G	Gc
Powder filling	EN/IEC 60079-5		q	M2, 2G	Mb, Gb
Oil - immersion	EN/IEC 60079-6		o	M2, 2G	Mb, Gb
Encapsulation	EN/IEC 60079-18		ma mb mC	M1, M2, 1G, 2G, 3G 1D, 2D, 3D	Ma, Mb, Ga, Gb,Gc Da, Db, Dc
Protection by enclo-sures	EN/IEC 60079-31		tD ta, tb, tc	1D, 2D, 3D	Da, Db, Dc
Optical radiation	EN/IEC 60079-28		op _a op _b op _c	1G, 2G, 3G	Ga, Gb, Gc
Type of protection for non-electrical equipment EN 13463-1 / IEC 80079-36					
Flow restricting	EN 13463-2		fr	3G, 3D	/
Flameproof	EN 13463-3		d	M2, 2G	/
Constructional safety	EN 13463-5 prIEC 80079-37		c	M2, 1G, 2G, 3G 1D, 2D, 3D	Mb, Ga, Gb, Gc Da, Db, Dc
Control of ignition sources	EN 13463-6 prIEC 80079-37		b	M2, 1G, 2G, 3G 1D, 2D, 3D	Mb, Ga, Gb, Gc Da, Db, Dc
Liquid immersion	EN 13463-8 prIEC 80079-37		k	M1, M2, 1G, 2G, 3G 1D, 2D, 3D	Ma, Mb, Ga, Gb, Gc Da, Db, Dc
Pressurized	EN/IEC 60079-2		p	M2, 2G, 2D 3G, 3D	/

Examples of a classification into zones

Zone 2 (gas)
Zone 22 (dust)
Category 3
presence in abnormal conditions

Zone 1 (gas)
Zone 21 (dust)
Category 2
presence occasionally

Zone 0 (gas)
Zone 20 (dust)
Category 1
presence continuously

Zone 0
Zone 1
Zone 2

Zone 22
Zone 21
Zone 20

Dust separator

Filter bag
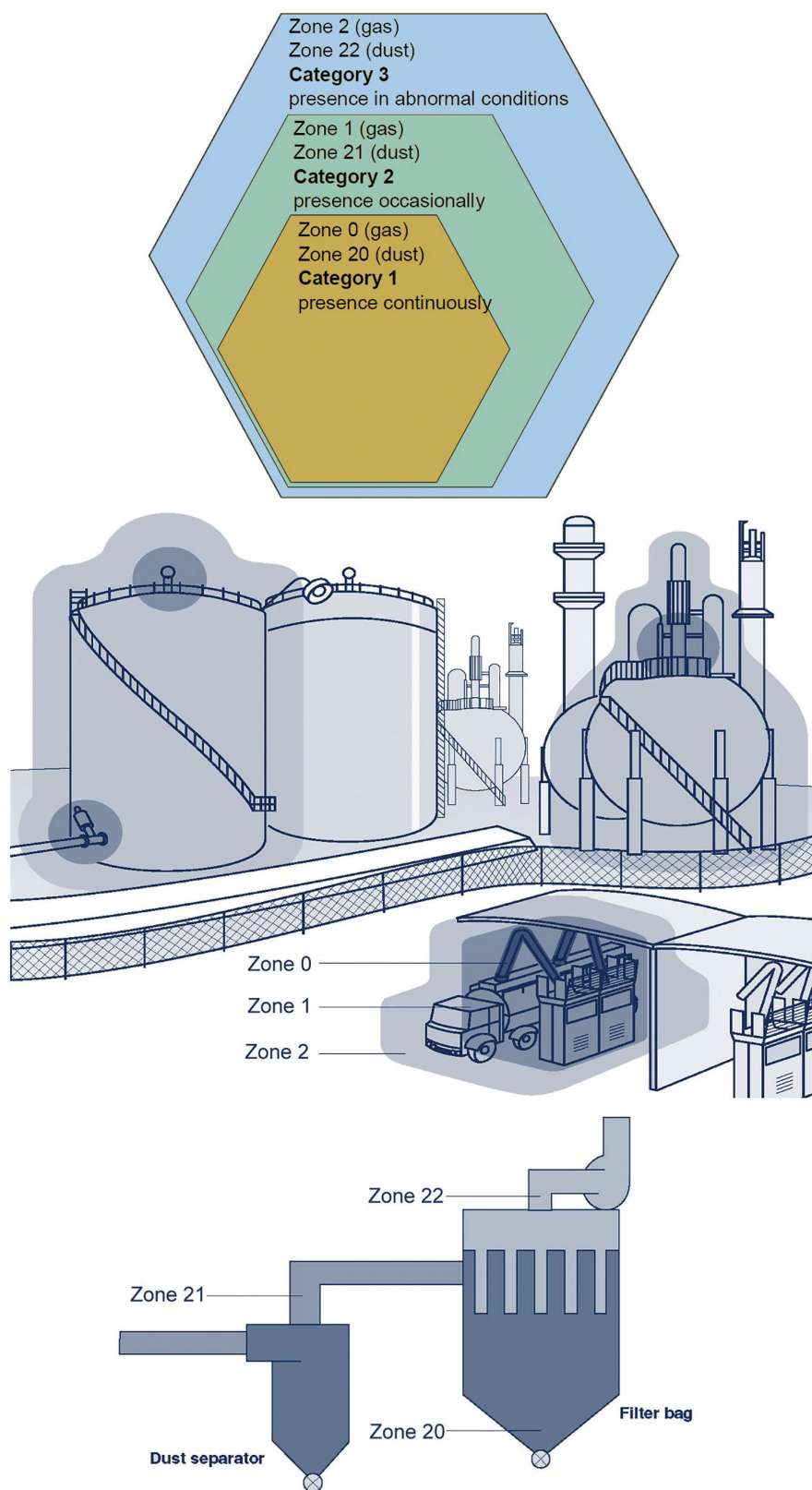
Above drawings are examples only and must not be used as a model for an actual plant whose design is, in every case, the responsibility of the constructor and operator.

Typical Electrical Equipment Marking According to ATEX 94/9/EC

ATEX Marks

⟨Ex⟩ II 2 G

- Ex-symbol
- Group
- Category
- Dust - Flammable - Gas

⟨Ex⟩ II 2 D

Marking according to standard

Ex d mb   IIB T5

- Protection concept
- Dust Group
- Gas Group
- Max. surface temperature
- Temperature Class

Ex tb IIIC   T90 °C

EPL (IEC)

Gb

- Dust - Flammable - Gas

Db

Motors

Zone-Ex Engineering official partners designs and manufactures electric motors and electrical equipment for safe and reliable solutions in power, lighting, control and monitoring applications.

Our product range includes:

- Electric motors
- Special motors and special solutions
- Switches and controllers

All products can be supplied for potentially explosive atmospheres, wet environments or tailored to customers' applications.

Lighting

Zone-Ex Engineering with our official partners offers a full range of explosion-proof lighting solutions for the widest possible range of applications from a single source: Individual lighting, floodlighting, compact lights, and emergency lighting.

From fluorescent tubes to the durable high-efficiency LED light sources, from the articles of plastic over stainless steel to aluminium die-cast bodies - BARTEC, TEPEX lighting range covers almost every application. A wide range of accessories as well as extensive services for designing lighting systems are also available.

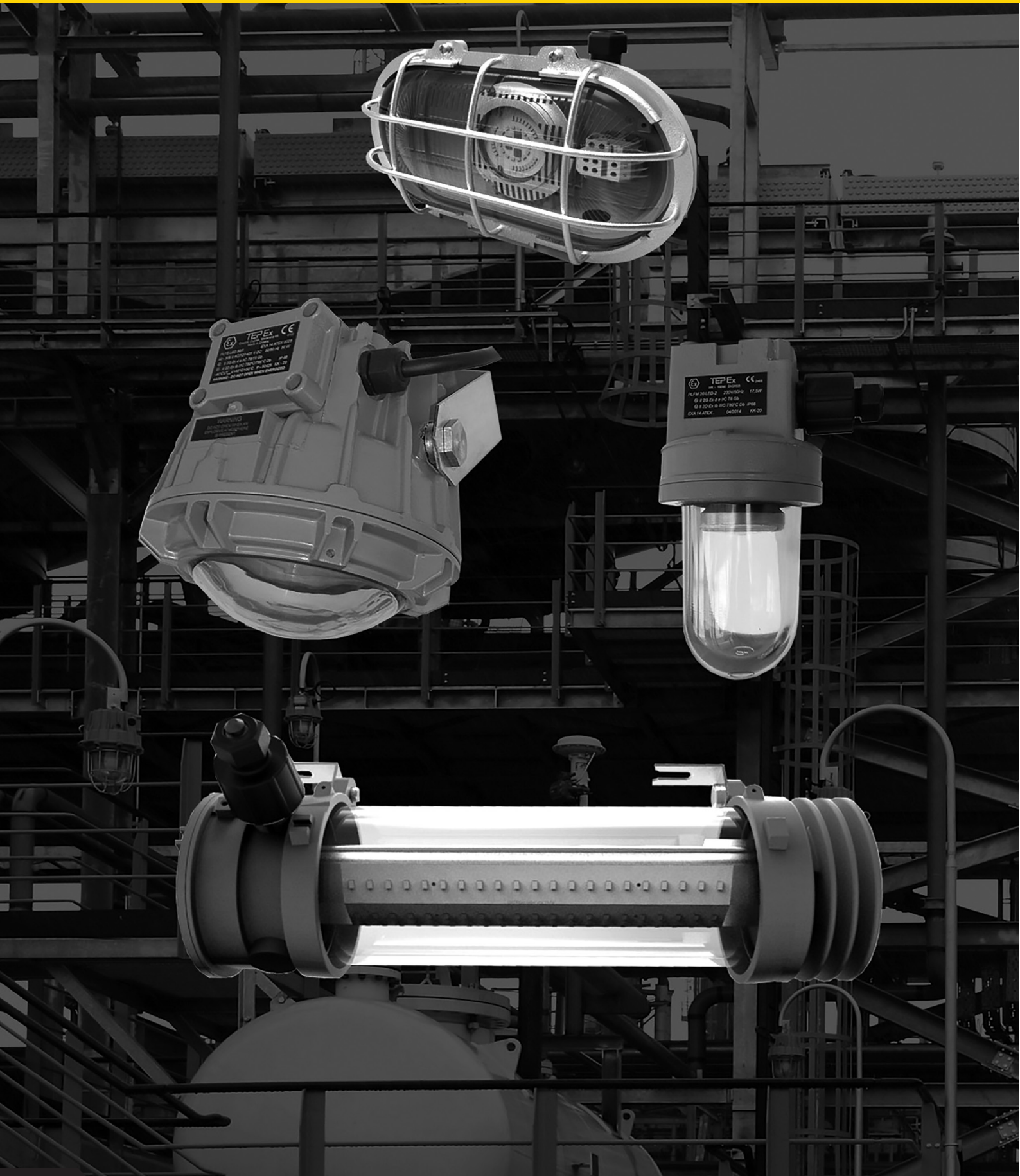We also provide portable lighting products.

Pendant light fittings - floodfittings

Fluorescent light fittings

LED light fittings

Cameras

SAMCON
Prozessleittechnik GmbH

For the territories of Saudi Arabia and ex-Yugoslav countries, Zone-Ex Engineering is an exclusive dealer of German brand SAMCON, well known manufacturer of camera systems for explosion risk and hazardous areas (94/9/EC ATEX).

CCTV applications range from simple monitoring applications to fully controllable digital video monitoring systems with voice transmission. Furthermore, SAMCON develops, produces and sells devices, software and engineering services in the area of process control engineering.

Catalog is containing an overview and data of all SAMCON CCTV Cameras, communication systems, equipment and accessories for explosion risk zones and hazardous areas.

ExCam Comparison Table

Cameras with an analog signal output

		Product	Model-Keys	Ex-Certification[1]	Prot.-Level	Enclosure Material[2]	T_{min} T_{max} [3]	Power Supply	Lens/IR-Filter	Min.-Illumination	Angle of View	Signal [4]	Video-comp. / Resolution[5]	More Info
Analog CVBS Signal		ExCam vario	T03-VA... T03-AL...	ATEX: Dust & Gas	IP67	Aluminum or Stainless Steel	-20° C +50° C	12 VDC to 30 VDC 5.5 W	Varifocal/ YES	0.15 lx	74.2° (wide)-30° (tele)	CVBS	MJPEG H.264 720x576	
		ExCam mini-Zoom	T03-VA...	ATEX: Dust & Gas	IP67	Stainless Steel	-20° C +50° C	12 VDC to 30 VDC 2.5 W	10 x Motor Zoom / NO	1.5 lx	46° (wide) - 4.6° (tele)	CVBS VISCA®	MJPEG H.264 720x576	
		ExCam nite-Zoom	T03-VA...	ATEX: Dust & Gas	IP67	Stainless Steel	-20° C +50° C	12 VDC to 30 VDC 6.5 W	10 x Motor Zoom / YES	0.0004 lx	52° (wide) - 5.4° (tele)	CVBS VISCA®	MJPEG H.264 720x576	
		ExCam maxi-Zoom	T03-VA2...	ATEX: Dust & Gas	IP67	Stainless Steel	-20° C +50° C	12 VDC to 30 VDC 2.7 W	18 x Motor Zoom / YES	0.01 lx	48° (wide) - 2.8° (tele)	CVBS VISCA®	MJPEG H.264 720x576	
		ExCam DC 3371	T08-TNXCD...	ATEX, IECEx, EAC-Ex: Dust & Gas	IP68	Stainless Steel	-50°C +50°C	24VAC/DC 20 W	37 x Motor Zoom / YES	0.7 lx	49.2° (wide) 1.4° (tele)	CVBS PELCO®	1/4" CCD Sony ExView HAD CCD	
		AmEx PTZ[28]	MPX-X...	ATEX, IECEx, EAC-Ex: Dust & Gas	IP66	Stainless Steel	-40°C +60°C	230VAC, 24VAC, 120VAC, 120 W	28 x Motor Zoom / YES	0.16 lx	55.8° (wide) 2.1° (tele)	CVBS PELCO®	1/4" CCD Super HAD CCD II	
		AmEx PTZ[36]	MPX-X...	ATEX, IECEx, EAC-Ex: Dust & Gas	IP66	Stainless Steel	-40°C +60°C	230VAC, 24VAC, 120VAC, 120 W	36 x Motor Zoom / YES	0.1 lx	57.8° (wide) 1.7° (tele)	CVBS PELCO®	1/4" CCD ExView HAD CCD	

Cameras with a digital SDI signal output

		Product	Model-Keys	Ex-Certification[1]	Prot.-Level	Enclosure Material[2]	T_{min} T_{max} [3]	Power Supply	Lens/IR-Filter	Min.-Illumination	Angle of View	Signal [4]	Video-comp. / Resolution[5]	More Info
Digital SDI Signal		ExCam miniSDI	coming soon....											
		ExCam midiSDI	coming soon....											
		ExCam do-meSDI	coming soon....											

TCP/IP Network cameras

		Product	Model-Keys	Ex-Certification[1]	Prot.-Level	Enclosure Material[2]	T_{min} T_{max} [3]	Power Supply	Lens/ IR-Filter	Min.-Illumination	Angle of View	Signal[4]	Video-comp. / Resolution[5]	More Info
		ExCam IP	T03-VA... T03-AL...	ATEX: Dust & Gas	IP67	Aluminum or Stainless Steel	-5° C +50° C	PoE, IEEE 802.3af Class 1 3,8 W	Fix / NO	1.0 lx	80° (ePTZ)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1280x800	
		ExCam IP1354	T08-VA2.2..	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Class 3 7,2 W	Varifocal / YES	Color: 0.1 lx, F1.2 B/W: 0.02 lx, F1.2	100° (wide) - 34° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1280x960	
		ExCam IP1355	T08-VA2.2..	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Class 3 7,1 W	Varifocal / YES	Color: 0.2 lx, F1.2 B/W: 0.04 lx, F1.2	109° (wide) - 39° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1920x1080	
		ExCam IP1357	T08-VA2.2..	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Class 3 7,9 W	Varifocal / YES	Color: 0.2 lx, F1.2 B/W: 0.04 lx, F1.2	92° (wide) - 32° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 2592x1944	
		ExCam IPM 1144-L	T08-VA2.1..	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Klasse 2 5,9 W	Varifocal, Integrated IR-LEDs/ YES	Color: 0,6 lx, S/W: 0.08 lx LED=ON: 0 lx	87° (wide) 40° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1280x960	
		ExCam IPM 1145	T08-VA2.1..	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Klasse 3 10,5 W	REMOTE ZOOM,& FOCUS/ YES	Color: 0,4 lx, B/W: 0.08 lx	95° (wide) 34° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1920x1080	
		ExCam IPM 1145-L	T08-VA2.1..	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Klasse 3 10,5 W	REMOTE ZOOM & FOCUS, IIntegrated IR-LEDs/ YES	Color: 0.4 lx, B/W: 0.08 lx LED=ON: 0 lx	95° (wide) 34° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1920x1080	
		ExCam IPQ1755	T08-VA2.2...	ATEX: Dust, Gas & Mining IECEx: Dust, Gas & Mining	IP68	Stainless Steel	-60° C +40° C	PoE, IEEE 802.3af Class 3 11 W	10xMotor Zoom, 12x Digital / YES	Color: 2 lx at 30 IRE, F1.8 B/W: 0.02 lx, at 30 IRE, F1.8	48,1° (wide) - 5,1° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1920x1080	
		ExCam IPQ 6045	T08-TNXCD...	ATEX, IECEx, EAC-Ex: Dust & Gas	IP68	Stainless Steel	-50°C +50°C	PoE, IEEE 802.3at (PoE+) Max. 30 W	32xMotor Zoom, PTZ/ YES	Color: 0,3 lux B/W: 0.03 lx	62,8° (wide) 2,23° (tele)	TCP/IP RTSP HTTP... VAPIX® ONVIF®	MJPEG H.264 1920x1080	

(Left vertical label: TCP/IP Net work cameras)

*1: Ex Certification (see Model Key):

ATEX Kennzeichnung & Zertifizierung:

Gas: (Ex) II 2G Ex d IIC T6 Gb
Staub: (Ex) II 2D Ex t IIIC T80°C Db IP68
Bergbau: (Ex) I M2 Ex d I T6 Mb

IECEx & EAC-Ex Karking & Certification:

Gas: Ex d IIC T6 Gb
Dust: Ex t IIIC T80°C Db IP68
Mining: Ex d I T6 Mb

*2: Housing Materials:

Aluminum or Stainless Steel
1.4301 / 1.4401 / 1.4404
(AISI 316 / 316L)

*3: Ambient Temperature:
Please see Model key.

*4:Video signal:

PAL CVBS/FBAS as standard
NTSC Models on demand

2592x1944

ExCam IP1357

ExCam IPQ6045, ExCam IPM1145, ExCam IPQ1755, ExCam IP1355   1920x1080

ExCam IP, ExCam IPM1144, ExCam IP1354   1280x800

720x576

AmEx PTZ
ExCam maxiZoom
ExCam niteZoom
ExCam miniZoom
ExCam vario

ExCam Vario
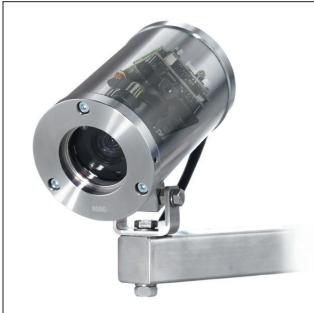
The ExCam vario is a camera approved for hazardous areas (gas and dust) in accordance with Directive 94/9/EC (ATEX). The ExCam vario is the world's smallest explosion-proof varifocal camera of its class. Despite its very compact dimensions, it features DSP, automatic shutter control, minimal illumination of 0.15 Lux, AGC-Turbo, S/W, fast lens with F1.2/3.8-9.5 mm, automatic white balance and IR cut filter.

Group II (Gas & Dust)	ATEX				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX	
Category	Ma	Mb
Application	✗	✗

ExCam vario in a stainless steel housing

Product / Model		Description	
ExCam vario T03-AL-C-005-X-L	Ex IP67 -20°C +50°C	Varifocal camera in an aluminum housing in accordance with Directive 94/9/EC (ATEX). Minimal illumination: 0.15 lx Angle: 74.2° (wide) to 30° (tele) Self adjusting DC iris Day/night function within IR cut filter Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP67 Protection level: IP 67 (IEC / EN 60529) Ambient temperature limit: -20° C < T_{amb} < 50° C See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ExCam vario T03-VA-C-005-X-L	Ex IP67 -20°C +50°C	Varifocal camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX). Minimal illumination: 0.15 lx Angle: 74.2° (wide) to 30° (tele) Self adjusting DC iris Day/night function within IR cut filter Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP67 Protection level: IP 67 (IEC / EN 60529) Ambient temperature limit: -20° C < T_{amb} < 50° C See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ExCam vario „long range" T03-XX-C-XXX-X-L		Option „long range" (surcharge): Version with passive two-wire transmitter. Transmission range of up to 500 m. Attention: Can only be used in combination with a VZT-21B/TB two-wire receiver	
ExCam vario „K2" T03-VA-C-XXX-X-L		Option „K2" (surcharge): Version with 90° angle flange for VA housing. The cable gland is laterally introduced into the flange.	
ExCam vario „pin free" T03-VA-C-XXX-X-L		Option „pin free" (surcharge): Version with an even VA housing without pin attachment. Suitable for flange fixation as well as hose clips.	
ExCam vario „more Power" T08-VA1.2.K1.BOR-C-XXX-X-X	IECEx Mining IP68 -60 °C	You need an ExCam® vario with IECEx and/or EAC-Ex certification? With an approval for mining or with extended temperature range? We are currently working on an upgrade. Please contact us!	

ExCam miniZoom

The ExCam miniZoom is a zoom camera approved for dust and gas explosion risk zones in accordance with EU Directive 94/9/EC (ATEX). The ExCam miniZoom is the world's smallest explosion-proof zoom camera of its class. Despite the camera's compact dimensions, it has a 10x motorised zoom lens, allowing it to be optimally adapted to the specific angle and lighting situation.

Group II (Gas & Dust)	ATEX				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX	
Category	Ma	Mb
Application	✗	✗

ExCam miniZoom in a stainless steel housing

Product / Model		Description	
ExCam miniZoom T03-VA-C-005-X-N	Ex IP67 0°C +50°C	Camera with motor zoom in a stainless steel housing in accordance with Directive 94/9/EC (ATEX). Minimal illumination: 1.5 lx Interface: VISCA®@RS422 Explosion protection (gas): Ex II 2G Ex d IICT6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80˚ C Db IP67 Protection level: IP 67 (IEC / EN 60529) Ambient temperature limit: 0˚ C < T_{amb} < +50˚ C See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ExCam miniZoom T03-VA-C-XXX-X-L	-20°C	Option housing heating (surcharge): Equipped with a self regulating heater for housing. Ambient temperature limit: -20˚ C < T_{amb} < 50˚ C	
ExCam miniZoom „K2" T03-VA-C-XXX-X-X		Option „K2" (surcharge): Option with 90˚ angle flange. The cable gland is laterally introduced into the flange.	
ExCam miniZoom „pin free" T03-VA-C-XXX-X-X		Option „pin free" (surcharge): Version with an even VA housing without pin attachment. Suitable for flange fixation as well as hose clips.	

ExCam niteZoom

The ExCam niteZoom is a zoom camera certified according to Directive 94/9/EG (ATEX). With its 1/3" Super HAD CCD II sensor and the IR cut filter it is one of the most light sensitive cameras of its class. As a result the ExCam niteZoom delivers high resolution pictures even at an illumination level of only 0.0004 lx. Despite its compact dimensions, it has a 10x motorized zoom lens, allowing it to be optimally adapted to a specific angle and lighting situation.

Group II (Gas & Dust)	ATEX				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX	
Category	Ma	Mb
Application	✗	✗

ExCam niteZoom in a stainless steel housing

Product / Model		Description	
ExCam niteZoom T03-VA-C-005-X-N	Ex IP67 0°C +50°C	Camera with motor zoom in a stainless steel housing in accordance with Directive 94/9/EC (ATEX). Minimal illumination: 1/4 s, 1/3 s mode & ICR on: 0.0004 lx Interface: VISCA@RS422 Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP67 Protection level: IP 67 (IEC / EN 60529) Ambient temperature limit: 0° C < T_{amb} < +50° C See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ExCam niteZoom T03-VA-C-XXX-X-L	-20°C	Option housing heating (surcharge): Equipped with a self regulating heater for housing. Ambient temperature limit: -20° C < T_{amb} < +50° C	
ExCam niteZoom „K2" T03-VA-C-XXX-X-X		Option „K2" (surcharge): Option with 90° angle flange. The cable gland is laterally introduced into the flange.	
ExCam niteZoom „pin free" T03-VA-C-XXX-X-X		Option „pin free" (surcharge): Version with an even VA housing without pin attachment. Suitable for flange fixation as well as hose clips.	
ExCam niteZoom „more Power" T08-VA1.2.K1.BOR-C-XXX-X-X	IECEx Mining IP68 -60 °C	You need an ExCam® niteZoom with IECEx and/or EAC-Ex certification? With an approval for mining or with extended temperature range? We are currently working on an upgrade. Please contact us!	

ExCam IP

The ExCam IP is a network camera approved for dust and gas explosion risk zones in accordance with EU Directive 94/9/EC (ATEX). Video streams and control signals are directly available within the network and due to Power over Ethernet (PoE) it is possible to have only one cable for transmitting data as well as power! The ExCam IP delivers several different video streams at the same time and supports MJPEG and H.264 in HD resolution of 1280x800 pixels.

Group II (Gas & Dust)	ATEX				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX	
Category	Ma	Mb
Application	✗	✗

ExCam IP in a stainless steel housing

Product / Model		Description	
ExCam IP T03-<u>AL</u>-C-005-X-N	Ex IP67 -5°C +50°C HD 720p Onvif	Network camera in an aluminum housing in accordance with Directive 94/9/EC (ATEX). Minimal illumination: 1.0 lx Horizontal angle: 80° Video compression: H.264, MJPEG Resolution: 1280 x 800 to 160 x 90 Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP67 Protection level: IP 67 (IEC / EN 60529) Ambient temperature limit: -5° C < T_{amb} < +50° C See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ExCam IP T03-<u>VA</u>-C-005-X-N	Ex IP67 -5°C +50°C HD 720p Onvif	Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX). Minimal illumination: 1.0 lx Horizontal angle: 80° Video compression: H.264, MJPEG Resolution: 1280 x 800 to 160 x 90 Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP67 Protection level: IP 67 (IEC / EN 60529) Ambient temperature limit: -5° C < T_{amb} < +50° C See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ExCam IP „K2" T03-VA-C-XXX-X-X		Option „K2" (surcharge): Option with 90° angle flange. The cable gland is laterally introduced into the flange.	
ExCam IP „pin free" T03-VA-C-XXX-X-X		Option „pin free" (surcharge): Version with an even VA housing without pin attachment. Suitable for flange fixation as well as hose clips.	

ExCam IP135x ^{series}

The ExCam IP135x is a network camera series, approved according to Directive 94/9/EG (ATEX), IECEx, and EAC-Ex. Due to Power over Ethernet (PoE), it is possible to have only one cable for transmitting data as well as power! The ExCam IP135x delivers several different video streams at the same time and supports MJPEG and H.264 in HD resolution. An additional feature is the option to freely select the lens and the extrem low temperature range.

Group II (Gas & Dust)	ATEX / IECEx/ EAC-Ex				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✓

ExCam IP1354 in a stainless steel housing

Product / Model		Description	
ExCam IP1354 T08-VA2.2.K1.BOR-C-005-X-N		Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) Power supply: PoE, IEEE 802.3af Class 3 (7.2 W) Minimal illumination: Color: 0.1 lx; black/white 0.02 lx, F1.2 Horizontal angle: 100˚ - 34˚ (for standard lens) Video compression: H.264 & Motion JPEG Resolution: 1280x960 (approx. 1.3 MP) to 160x90 Lens mount type: CS Mount Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80˚ C Db IP68 Explosion protection (mining): Ex I M2 Ex d I Mb Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10˚ C < T_{amb} < +40˚ C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IP1355 T08-VA2.2.K1.BOR-C-005-X-N		Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) PoE, IEEE 802.3af Class 3 (7.1 W) Minimal illumination: Color: 0.2 lux, black/white: 0.04 lux, F1,2 Horizontal angle: 109˚ - 39˚ (HD, 16/9) Video compression: H.264 & Motion JPEG Resolution: 1920 x 1080 (approx. 2 MP) to 160 x 90 Lens mount type: CS Mount Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80˚ C Db IP68 Explosion protection (mining): Ex I M2 Ex d I Mb Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10˚ C < T_{amb} < +40˚ C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IP1357 T08-VA2.2.K1.BOR-C-005-X-N		Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) Power supply: PoE, IEEE 802.3af Class 3 (7.9 W) Minimal illumination: Color: 0.2 lx, black/white: 0.04 lx, F1.2 Horizontal angle: 92˚ - 32˚ (HD, 16/9) Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG Resolution: 2592 x 1944 (approx. 5 MP) to 160 x 90 Lens mount type: CS Mount Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80˚ C Db IP68 Explosion protection (mining): Ex I M2 Ex d I Mb Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10˚ C < T_{amb} < +40˚ C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IP135x T08-VA2.2.K1.BOR-C-XXX-X-L		Option: Housing heating (surcharge): Equipped with a self-regulating heater to meet low temperature ranges: Ambient temperature: -30˚ C < T_{amb} < +40˚ C	
ExCam IP135x T08-VA2.2.K1.BOR-C-XXX-X-LL		Option: Housing heating for arctic temperatures (surcharge): Equipped with a self-regulating heater to meet extremely low temperature ranges. Includes two cable glands certified for -60˚ C with integrated pressure barrier: Ambient temperature: -60˚ C < T_{amb} < +40˚ C	

ExCam IPM114x series

The ExCam IPM114x is a network camera series, approved according to Directive 94/9/EG (ATEX), IECEx, and EAC-Ex. As interchangable lenses are not available for this series, this allows an extremly compact design and a cost-effective manufacturing! In addition, due to the fixed mounted lenses, functions such as Remote-Zoom and Remote-Focus are available: It is now possible to adjust the angle of view elctronically without the necessity to open the housing. Also, some models of the series offer integrated IR-LED illumination!

Group II (Gas & Dust)	ATEX / IECEx/ EAC-Ex				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✓

ExCam IPM1145-L in a stainless steel housing

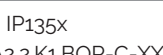| Product / Model		Description	
ExCam IPM1144-L T08-VA2.1.K1.BOR-C-005-X-N new!		Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) Power supply: PoE, IEEE 802.3af Class 3 (5.9 W) Color: 0.6 lux, F1.4, B/W: 0.08 lux, F1.4 Horizontal angle: 87° - 40° (HD, 16/9) Resolution: 1280x800 (ca. 1 megapixel) to 352x240 Functions: IR-LED, etc... Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP68 Explosion protection (mining): Ex I M2 Ex d I Mb Protection level: IP 68 (IEC / EN 60529) Ambient temperature: 0°C < T_{amb} < +40°C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IPM1145 T08-VA2.1.K1.BOR-C-005-X-N new!		Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) Power supply: PoE, IEEE 802.3af Class 3 (10.5 W) Color: 0.4 lux, F1.4, B/W: 0.08 lux, F1.4 Horizontal angle: 95° - 34° (HD, 16/9) Resolution: 1920x1080 (ca. 2 megapixel) to 160 x 90 Functions: Remote-Zoom, Remote-Focus, etc... Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP68 Explosion protection (mining): Ex I M2 Ex d I Mb Protection level: IP 68 (IEC / EN 60529) Ambient temperature: 0°C < T_{amb} < +40°C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IPM1145-L T08-VA2.1.K1.BOR-C-005-X-N new!		Network camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) PoE, IEEE 802.3af Class 3 (10,5 W) Color: 0.4 lux, F1.4, B/W: 0.08 lux, F1.4 Horizontal angle: 95° - 34° (HD, 16/9) Resolution: 1920x1080 (ca. 2 megapixel) to 160 x 90 Functions: Remote-Zoom, Remote-Focus, IR-LEDs, etc... Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80° C Db IP68 Explosion protection (mining): Ex I M2 Ex d I Mb Protection level: IP 68 (IEC / EN 60529) Ambient temperature: 0°C < T_{amb} < +40°C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IPM114x T08-VA2.2.K1.BOR-C-XXX-X-L	-30°C	Option: Housing heating (surcharge): Equipped with a self-regulating heater to meet low temperature ranges: Ambient temperature: -30° C < T_{amb} < +40° C	
ExCam IPM114x T08-VA2.2.K1.BOR-C-XXX-X-LL	-60 °C	Option: Housing heating for arctic temperatures (surcharge): Equipped with a self-regulating heater to meet extremely low temperature ranges. Includes two cable glands certified for -60° C with integrated pressure barrier: Ambient temperature: -60° C < T_{amb} < +40° C	

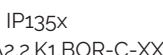# ExCam IPQ1755

FullHD meets motor zoom! The ExCam IPQ1755 is a network camera with motor zoom, approved according to Directive 94/9/EG (ATEX), IECEx, and EAC-Ex. Due to Power over Ethernet (PoE) is possible to have only one cable for transmitting data as well as power! The ExCam IPQ1755 delivers several different video streams at the same time and supports MJPEG and H.264 in HD resolution of 1920x1080 pixels.

Group II (Gas & Dust)	ATEX / IECEx				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

ExCam IPQ1755 in a stainless steel housing

Product / Model		Description	
ExCam IPQ1755￼T08-VA2.2.K1.BOR-C-005-X-N	ATEX IECEx EAC Ex Mining IP68 -10°C +40°C Onvif HD 1080p	Network camera in a stainless steel housing in accordance with￼Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU)￼Power supply: PoE, IEEE 802.3af Class 3 (11.0 W)￼Minimal illumination: Color: 0.2 lx, black/white: 0.04 lx, F1,2￼Horizontal angle: 48.1˚ - 5.1˚ (HD, 16/9) (motor zoom)￼Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG￼Resolution: 1920 x 1080 to 160 x 90￼Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb￼Explosion protection (dust): Ex II 2D Ex t IIIC T80˚ C Db IP68￼Explosion protection (mining): Ex I M2 Ex d I Mb￼Protection level: IP 68 (IEC / EN 60529)￼Ambient temperature limit: -10˚ C < T_{amb} < +40˚ C￼See data sheet for technical data - www.samcon.eu￼Product group: A, tariff number: 8525 8019	
ExCam IPQ1755￼T08-VA2.2.K1.BOR-C-XXX-X-L	-30°C	Option: Housing heating (surcharge):￼Equipped with a self-regulating heater to meet low temperature ranges.￼Ambient temperature: -30˚ C < T_{amb} < +40˚ C	
ExCam IPQ1755￼T08-VA2.2.K1.BOR-C-XXX-X-LL	-60 °C	Option: Housing heating for arctic temperatures (surcharge):￼Equipped with a self-regulating heater to meet extremely low temperature ranges.￼Includes two cable glands certified for -60˚ C with integrated pressure barrier.￼Ambient temperature: -60˚ C < T_{amb} < +40˚ C	
ExCam IPQ1755 „K2"￼T08-VA2.2.K2.BOR-C-XXX-X-N		Option „K2" (surcharge):￼Option with 90˚ angle flange.￼The cable gland is laterally introduced into the flange.￼See data sheet for technical data - www.samcon.eu￼Product group: A, tariff number: 8525 8019	

ToughCam series

Our ToughCam Series comprises mechanically process as well as security cameras which are extremely robust. All ToughCams meet the same high quality standards as our ExCams and are therefore perfect for even the roughest industrial conditions. The stainless steel housing in combination with borosilicate glass and high-end sealings make our ToughCams resistant to nearly all media; withstanding even the highest mechanical demands.

Group II (Gas & Dust)	-				
Zone	0	1	2	21	22
Application	✗	✗	✗	✗	✗

Group I (Mining)	-	
Category	Ma	Mb
Application	✗	✗

ToughCam IP and IP1357 in a stainless steel housing (VA & VA2.2)

Product / Model		Description	
ToughCam vario T10-AL-005-X-L	IP67 ❄ -20°C ☀ +50°C	Varifocal camera in an aluminum housing (IP67). Minimal illumination: 0.15 lx Angle: 74.2° (wide) to 30° (tele) Self adjusting DC iris Day/night function within IR cut filter Ambient temperature limit: $-20°\,C < T_{amb} < 50°\,C$ See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ToughCam vario T10-VA-005-X-L	IP67 ❄ -20°C ☀ +50°C	Varifocal camera in a stainless steel housing (IP67). Minimal illumination: 0.15 lx Angle: 74.2° (wide) to 30° (tele) Self adjusting DC iris Day/night function within IR cut filter Ambient temperature limit: $-20°\,C < T_{amb} < 50°\,C$ See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ToughCam miniZoom T10-VA-005-X-N	IP67 ❄ 0°C ☀ +50°C	Camera with motor zoom in a stainless steel housing (IP67) Minimal illumination: 1.5 lx Interface: VISCA@RS232 or VISCA@RS422 Ambient temperature limit: $0°\,C < T_{amb} < 50°\,C$ See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ToughCam niteZoom T10-VA-005-X-N	IP67 ❄ 0°C ☀ +50°C	Camera with motor zoom in a stainless steel housing (IP67) Minimal illumination: 1/4 s, 1/3 s Mode & ICR on: 0.0004 lx Interface: VISCA@RS422 Ambient temperature limit: $0°\,C < T_{amb} < 50°\,C$ See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ToughCam IP T10-AL-005-X-N	IP67 ❄ -5°C ☀ +50°C HD 720p Onvif	Network camera in an aluminum housing (IP67) Minimal illumination: 1.0 lx Horizontal angle: 80° Video compression: H.264, MJPEG Resolution: 1280 x 800 to 160 x 90 Ambient temperature limit: $-5°\,C < T_{amb} < 50°\,C$ See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	
ToughCam IP T10-VA-005-X-N	IP67 ❄ -5°C ☀ +50°C HD 720p Onvif	Network camera in a stainless steel housing (IP67) Minimal illumination: 1.0 lx Horizontal angle: 80° Video compression: H.264, MJPEG Resolution: 1280 x 800 to 160 x 90 Ambient temperature limit: $-5°\,C < T_{amb} < 50°\,C$ See data sheet for technical data - www.samcon.eu Product group: A, tariff number: 8525 8019	

ToughCam series

Product / Model		Description	
ToughCam IP1354 T10-VA2.2.K1.BOR-005-X-N	**IP68** ❄ -10°C ☀ +40°C Onvif **HD** 720p	Network camera in a stainless steel housing Power supply: PoE, IEEE 802.3af Class 3 (7.2 W) Minimal illumination: Color: 0.1 lx, black/white: 0.02 lx, F1.2 Horizontal angle: 100° - 34° (at standard lense) Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG Resolution: 1280x960 (approx. 1.3 MP) to160x90 Lens mount type: CS Mount Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10° C < T_{amb} < +40° C Product group: A, tariff number: 8525 8019	
ToughCam IP1355 T10-VA2.2.K1.BOR-005-X-N	**IP68** ❄ -10°C ☀ +40°C Onvif **HD** 1080p	Network camera in a stainless steel housing Power supply: PoE, IEEE 802.3af Class 3 (7.1 W) Minimal illumination: Color: 0.2 lx, black/white: 0,04 lx, F1.2 Horizontal angle: 109° - 39° (HD, 16/9) Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG Resolution: 1920 x 1080 (ab. 2 Megapixel) to 160 x 90 Lens mount type: CS Mount Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10° C < T_{amb} < +40° C Product group: A, tariff number: 8525 8019	
ToughCam IP1357 T10-VA2.2.K1.BOR-005-X-N	**IP68** ❄ -10°C ☀ +40°C Onvif **HD** 1080p	Network camera in a stainless steel housing Power supply: PoE, IEEE 802.3af Class 3 (7.9 W) Minimal illumination: Color: 0.2 lx, black/white: 0.04 lx, F1.2 Horizontal angle: 92° - 32° (HD, 16/9) Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG Resolution: 2592 x 1944 (approx. 5 MP) to 160 x 90 Lens mount type: CS Mount Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10° C < T_{amb} < +40° C Product group: A, tariff number: 8525 8019	
ToughCam IPQ1755 T10-VA2.2.K1.BOR-005-X-N	**IP68** ❄ -10°C ☀ +40°C Onvif **HD** 1080p	Network camera in a stainless steel housing Power supply: PoE, IEEE 802.3af Class 3 (11.0 W) Minimal illumination: Color: 0.2 lux, black/white: 0.04 lux, F1.2 Horizontal angle: 48.1° - 5.1° (HD, 16/9) (motor zoom) Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG Resolution: 1920 x 1080 to 160 x 90 Protection level: IP 68 (IEC / EN 60529) Ambient temperature limit: -10° C < T_{amb} < +40° C Product group: A, tariff number: 8525 8019	

Some ToughCam series options

Product / Model		Description	
Option heating for housing (Only available for certain Models!)	❄ -30°C	Option: Housing heating (surcharge): Equipped with a self-regulating heater to meet low temperature ranges: Ambient temperature: -30° C < T_{amb} < +40° C	
Option heating for housing (Only available for certain Models!)	❄ -60 °C	Option: Housing heating for arctic temperatures (surcharge): Equipped with a self-regulating heater to meet for extremely low temperature ranges: Ambient temperature: -60° C < T_{amb} < +40° C	
Option „K2" (Only available for certain Models!)		Option „K2" (surcharge): Option with 90° angle flange. The cable gland is laterally introduced into the flange.	
Option „pin free" (Only available for certain Models!)		Option „pin free" (surcharge): Version with an even VA housing without pin attachment. Suitable for flange fixation as well as hose clips	

ExCam EXC3371

The ExCam EDC3371 is a dome camera with an analog signal output, approved according to Directive 94/9/EG (ATEX), IECEx, and EAC-Ex. The scratch and heat resistant Lexan™ dome guarantees a perfect picture quality despite the tough requirements of explosion protection. The camera's heating concept is unique: If necessary, the integrated and electronically controlled heating panel generates heat which via a radial and an axial flow fan is transported to the dome - even at -50˚C.

Group II (Gas & Dust)	ATEX / IECEx/ EAC-Ex				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✗

ExCam EDC3371 in a stainless steel housing

Product / Model		Description	
ExCam EDC3371 T08-TNXCD-C-005-X-N new!	Ex IECEx EHL Ex IP68 0°C +50°C Onvif HD 1080p	Analog dome camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) Power supply: 24V AC/DC, 20 W Minimum illumination: Color: 0.7 lux, B/W: 0.01 lux Horizontal angle: 49.2˚ - 1.4˚ Zoom: 37x optical zoom Pan: 360˚ continuously, 380˚/s, Tilt: 180˚, 380˚/s Functions: Preset positions, guard tours etc... Protocol: PELCO® Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80˚C Db IP68 Protection level: IP 68 (IEC / EN 60529) Ambient temperature: 0˚C < T_{amb} < +50˚C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam EDC3371 T08-TNXCD-C-XXX-X-L	-30°C	Option: Housing heating (surcharge): Equipped with a self-regulating heater to meet low temperature ranges. Umgebungstemperatur: -30˚C < T_{amb} < +50˚C	
ExCam EDC3371 T08-TNXCD-C-XXX-X-LL	-50°C	Option: Housing heating for arctic temperatures (surcharge): Equipped with a self-regulating heater to meet extremely low temperature ranges. Includes two cable glands certified for -60˚ C with integrated pressure barrier. Ambient temperature: -50˚C < T_{amb} < +50˚C	

ExCam IPQ6045

The ExCam IPQ6045 network dome camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex. It combines outstanding optical, electronical and mechanical features. The scratch and heat resistant Lexan™ dome guarantees a perfect picture quality despite the tough requirements of explosion protection. The camera's heating concept is unique: If necessary, the integrated and electronically controlled heating panel generates heat which via a radial and an axial flow fan is transported to the dome - even at -50°C.

Group II (Gas & Dust)	ATEX / IECEx/ EAC-Ex				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✗

ExCam IPQ6045 in a stainless steel housing

Product / Model		Description	
ExCam IPQ6045 T08-TNXCD-C-005-X-N new! 	⟨Ex⟩ IECEx EAC Ex IP68 ❄ 0°C ☀ +50°C Onvif HD 1080p	Network dome camera in a stainless steel housing in accordance with Directive 94/9/EC (ATEX), IECEx, and EAC-Ex (CR TU) PoE, IEEE 802.3at (30 W) Minimum illumination: Color: 0.3 lux, B/W: 0.03 lux Horizontal angle: 62.8° - 2.23° (HD, 16/9) Zoom: 32x optical zoom, 12x digital zoom Pan: 360° continuously, 0.05° – 450°/s Tilt: 180°, 0.05° – 450°/s Resolution: 1920 x 1080 bis 160 x 90 Functions: Preset positions, guard tours, sharpness, contrast, etc... Explosion protection (gas): Ex II 2G Ex d IIC T6 Gb Explosion protection (dust): Ex II 2D Ex t IIIC T80°C Db IP68 Protection level: IP 68 (IEC / EN 60529) Ambient temperature: 0°C < T_{amb} < +50°C www.samcon.eu, product group: A, tariff number: 8525 8019	
ExCam IPQ6045 T08-TNXCD-C-XXX-X-L	❄ -30°C	Option: Housing heating (surcharge): Equipped with a self-regulating heater to meet low temperature ranges. Ambient temperature: -30°C < T_{amb} < +50°C	
ExCam IPQ6045 T08-TNXCD-C-XXX-X-LL	❄ -50°C	Option: Housing heating for arctic temperatures (surcharge): Equipped with a self-regulating heater to meet extremely low temperature ranges. Includes two cable glands certified for -60° C with integrated pressure barrier. Ambient temperature: -50°C < T_{amb} < +50°C	

AmEx PTZ System
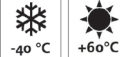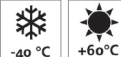
The AMEX PTZ system is an explosion protected stainless steel PTZ positioning system. It is certified and particularly designed and developed to meet the strict requirements of equipment, used in explosion risk areas at which flammable gases and powders can be present. The system offers an extraordinary performance for the observation of critical processes in explosion risk zones and is therefore the perfect choice for a video surveillance in the chemical as well as in the oil and gas industry.

Group II (Gas & Dust)	ATEX / IECEx				
Zone	0	1	2	21	22
Application	✗	✓	✓	✓	✓

Group I (Mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✗

AmEx PTZ System in stainless steel

Product / Model		Description	
AmEx PTZ MPX-X-PVW000A-005-X		PTZ camera in a stainless steel housing according to Directive 94/9/EC (ATEX) and IECEx Explosion protection (gas): Ex d IIC T6 Ta -40˚ C to 60˚ C Gb Explosion protection (dust): Ex tb IIIC T85˚ C Ta -40˚ C to 60˚ C Db Protection level: IP 66 (IEC / EN 60529) Material: Electropolished stainless steel AISI 316L Pan/Tilt speed: 0.1 ˚ -100˚ / s Tilt: -90˚ / +90˚ Day / night function Analog zoom factor: 36x Control protocol: Pelco-D@485 and others (q.v. data sheet) All required cable glands are included. See data sheet for technical data - www.samcon.eu Product group: A	
AmEx PTZ MPX-T2-PAW0000A-005-X		PTZ camera a stainless steel housing with analog and IR camera according to Directive 94/9/EG (ATEX) and IECEx Explosion protection (gas): Ex d IIC T6 Ta -40˚ C to 60˚ C Gb Explosion protection (dust): Ex tb IIIC T85˚ C Ta -40˚ C to 60˚ C Db Protection level: IP 66 (IEC / EN 60529) Material: Electropolished stainless steel AISI 316L Pan/Tilt speed: 0.1 ˚ - 100˚ / s Tilt: -90˚ / +90˚ Day / night function Analog zoom factor: 36x Control protocol: Pelco-D@485 and others (q.v. data sheet) All required cable glands are included. See data sheet for technical data - www.samcon.eu Product group: A	
Further Models upon request		Further Models upon request	
AmEx - MPXWBA		Wall Mount Bracket Electropolished AISI 316L stainless steel Load rating: 40 kg To be combined with the following modules: - AmEx - MPXCW - AmEx - MPXCOL Product group: A	
AmEx - MPXWBTA		Mounting attachment for rails and ceilings Electropolished AISI 316L stainless steel Load rating: 40 kg Dimensions: Ø 238 mm Product group: A	
AmEx - MPXCOL		Pole mount adapter Electropolished AISI 316L stainless steel Suitable for pole diameters of 110 -150 mm Load capacity: 50 kg Suitable for AmEx - MPXWBA wall mount bracket Product group: A	

AmEx PTZ System

Product / Model		Description	
AmEx - MPXCW		Corner mount adapter-Adapter Electropolished AISI 316L stainless steel Load capacity: 50 kg Suitable for AmEx - MPXWBA wall mount bracket Product group: A	
AmEx - WASEX	Ex	Washer pump with explosion-proof solenoid valve Enclosure made of stainless steel AISI 316L Delivery height: Up to 20 m Different loading modes Power supply: 24 VAC/DC Maximum power intake: 20 W Explosion protection (gas): Ex d IIC T4 Gb Explosion protection (dust): Ex tb IIIC T130° C Db Product group: A	
Further Models and accessories upon request		Further Models upon request	

Dome camera systems

The AXIS Q6045-S is a high-speed surveillance camera in a pressurized, seawater resistant stainless steel housing. The robust camera offers 360° pan as well as 90° tilt possibility and due to HDTV 1080p and a 20 x optical zoom with auto focus it delivers extremely detailed zoom views.

Group II (Gas & Dust)	ATEX / IECEx				
Zone	0	1	2	21	22
Application	✗	✗	✗	✗	✗

Group I (Mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✗

AXIS Q6045-S 50HZ in stainless steel housing

Product / Model		Description	
AXIS Q6045-S 50HZ	IP66 IP67 IP69K -30°C +50°C Onvif HD 1080p	The AXIS Q6045-S is a high-speed surveillance camera in a pressurized, seawater resistant stainless steel housing for safe areas. Resolution: HD 1080p System: True Day&Night Image sensor: 1/3" Progressive Scan CMOS-Sensor Video compression: H.264, M-JPEG Resolution max.: 1920x1080 Frame rate: 25 fps IR cut filter: Switchable Sensitivity: 0.6 Lux Lens: Zoom Slewing range: 360° Speed: 450°/Sec. Alarm input: 2 Internal storage: SD card, SDHC card, SDXC card Mounting options: Wall mount, ceiling mount Power supply: 12VDC Tamb: -30° C to +50° C Protection level: IP66, IP67, IP69K Certification: CE, MIL-STD-810G 509.5 Product group: C	
Further Models upon request		Further Models, e.g. for indoor applications, upon request.	
AXIS T91C61		Wall mounting arm for Axis Q60-S series, Including AXIS T94S01D Pendant Kit, Material: Stainless steel Product group: C	
AXIS T91C67		AXIS T91C67 Mast mounting arm for AXIS T91C61 Material: Stainless steel Product group: C	
Further accessories upon request		Further accessories upon request	

AmNEx PTZ system

AmNEX PTZ in Stainless Steel

The AmNEX PTZ system is very robust against extreme environmental conditions, it is very low maintenance and resistant to corrosion. This precision is reached due the maximum care during the manufacturing processes as well as to the quality of the passivated and electropolished AISI 316L stainless steel. Included in the delivery scope is a wiper.

Group II (Gas & Dust)	ATEX / IECEx				
Zone	0	1	2	21	22
Application	✗	✗	✗	✗	✗

Group I (Mining)	ATEX / IECEx	
Category	Ma	Mb
Application	✗	✗

Product / Model		Description	
AmNEx PTZ NXPTZ-X-PVW000A-005-X	**IP66** ❄ -40 °C ☀ +60°C	PTZ camera in a stainless steel housing for safe areas Material: electropolished stainless steel AISI 316L Pan/Tilt speed: 0.1°/s - 100°/s Tilt: -90° / +90° Day / night function Analog zoom factor: 36x Protocol: Pelco-D@485 and others (q.v. data sheet) All required cable connections included. See data sheet for technical data - www.samcon.eu Protection level: IP66 True Progressive Scan High resolution: Up to 550 TV lines Image stabilizer of the latest generation (mode stable zoom) Day/Night (Auto ICR: Automatic removal of the IR filter) Pre installed wiper Operating temperature: -40° C / +60° C Product group: C	
Further Models upon request		Further Models upon request	
AmNEx - MPXWBA		Wall Mount Bracket Electropolished AISI 316L stainless steel Load rating: 40 kg To be combined with the following modules: - AmNEx - MPXCW - AmEx - MPXCOL Product group: A	
AmNEx - MPXWBTA		Mounting attachment for rails and ceilings Electropolished AISI 316L stainless steel Load rating: 40 kg Dimensions: Ø 238 mm Product group: A	
AmNEx - MPXCOL		Pole mount adapter Electropolished AISI 316L stainless steel Suitable for pole diameters of 110 - 150 mm Load capacity: 50 kg Suitable for AmNEx - MPXWBA wall mount bracket Product group: A	
AmEx - MPXCW		Corner mount adapter-Adapter Electropolished AISI 316L stainless steel Load capacity: 50 kg Suitable for AmNEx - MPXWBA wall mount bracket Product group: A	

SAMCONtrol

SAMCONtrol is the world's first purely browser-based video management system. This means there is no need to install additional software or hardware other than a standard web browser in order to operate a video network. Expensive software updates or complex configurations are replaced by plug & play and simple drag & drop. Video signals can be displayed anywhere in the world, and on any device, whether a PC, Tablet or Smartphone. SAMCONtrol supports all current IP transmission technologies from Ethernet, DSL, GPRS to UMTS or VPN, ISDN or RDT. This means that SAMCONtrol can not only be used in new video networks but it can also be integrated easily into existing systems.

Video management systems are at the heart of every video network. Unfortunately, most video management systems are still based on obsolete technology. In order to configure cameras or receive signals, software has to be installed on every workstation, or every PC that is used as an image source. This is not only time-consuming but expensive, since each installation usually incurs a royalty.

SAMCONtrol breaks new ground: video signals and camera configurations are stored on a video server. They are then accessed using a normal web browser. That means no additional software is required to create a video network. With SAMCONtrol videos can be retrieved using any device - whether a PC already connected to the PCS, an explosion-proof laptop in the field or by a service technician accessing the network from the other side of the country using a Tablet or even a Smartphone.

Best of all, the video network can also be configured on each terminal. A field technician can quickly and easily click on a particular display - for example to deal with an urgent matter. What this means is that video signals are 100% available anywhere.

The Technology

Instead of managing cameras by using software that has to be installed on a PC, all processes are mapped in a conventional web browser. This means visualization of digital camera images can be done using open web technologies such as Java, Flash and HTML scripts. With the help of standardized components such as, for example, a zoom bar, site plans or pre-configured views, individual visualisation pages can be clicked together like an Internet Homepage. This removes the need for costly programming, software updates or releases from camera manufacturers. Only the standard system web browser of the system is required. SAMCONtrol is therefore not only compatible with the complete range of SAMCON cameras, but with all cameras from AXIS, market leader of network and surveillance cameras.

The Network: Intranet and Internet security

With SAMCONtrol, a standard web browser such as Microsoft's Internet Explorer, Firefox or Chrome can be used as the client. The web browser is connected to the video server to which the cameras are also connected. An operator is therefore able to configure cameras or merge to a single display. In this way, cameras can be assigned to points on a geographical map, site plan or flow chart. The operator can save this view and will receive a unique link (URL). This link can then be accessed via the Intranet or Internet - always password-protected. Access to the network can also be restricted via the IP range or firewall. This ensures that video footage can only be retrieved by authorised persons. Because it is browser-based, the video management system offers unlimited multi-user access and can therefore also be used in international control centres which are responsible for multiple sites. The intuitive configuration tool allows users to quickly configure complete systems. Instead of a multiplicity of proprietary software, the complete system is only addressed via a video management system. This reduces training costs and the risk of operating errors.

Views: split screen mode, site plans, flow charts or maps

The playback module is user-friendly and offers various modes for playback, navigation and display of video recordings. One can switch between different videos in the playlist or history. All images from the connected cameras can not only be shown in real time, but also controlled (PTZ). Standard monitoring functions such as video sequencing and display in split-screen modes are also available. Operators of

SAMCONtrol

the equipment are supported in their task by the fact that cameras can be located and displayed on a map or flow chart, or on a site plan. The map view (street plans or maps) offers a bird's-eye aerial view, which is especially suitable for installations spread over a wide area. Site plans allow cameras mounted on several floors or in different locations of a site to be found and displayed quickly. Operators in the control room no longer have to memorize camera designations to find a camera again, but can navigate easily through the installation site plan. The possibility of customizing the system allows operators to set priorities and adjust the system for the most effective control.

Fittings

A major factor in all harsh and hazardous environments is the ability to provide reliable cable terminations and conduit connections.

Copper-Free Aluminum Connectors are designed to terminate jacketed interlocked cables (MC), corrugated continuously welded metal clad cables (MC-HL) and non-armored cables (SO, TC) Iron and Aluminum Fittings for rigid and IMC conduit raceway systems. Third party certified to NEC, CEC, ATEX and IEC standards which enables equipment and installations to be suitable for global applications.

Enclosures

We understand that each of our customers have different needs. Our committed employees work in combination with our clients engineering staff to ensure our enclosures meet and surpass their expectations.

Our extensive range of bolted and threaded enclosures are utilized daily for use with control, monitoring, detection and automation products.

Our product portfolio of control products come in both metallic and non-metallic designs. The size and depth of the control product range enable us to provide the best solutions to your control problems.

Distribution equipment

Zone-Ex Engineering offer solutions to your distribution and control applications to both North American and IEC Standards.

From lighting, trace heating and power distribution applications to complex PLC control systems, our applications engineers have a competence to take a project from conceptual to finished goods. The versatility of our product range allows us to use multiple enclosure coupling techniques to cater to all demands of our clients. From single point protection to rack applications, we provide cost effective solutions with high quality, reliability and ease-of-maintenance built in.

Plugs & receptacles

Ranging from 20 Amp bladed style to 200 Amp pin & sleeve configurations, we provide numerous solutions for safely supplying power to fixed and portable equipment in hostile environments.

Interchangeability with the other manufacturers configurations provides user flexibility for real world applications. The range also has exclusive features such as breech-lock caps with a "3rd Hand" notch.

Devices include plugs, receptacles, panel receptacles, and connectors to extend the reach of portable equipment. For personnel safety, ground fault protected receptacles, both portable and fixed, are available.

Plugs and sockets Zone 1, 2, 21, 22

APPLICATION

Explosion proof plug and socket receptacles 16A to 63A, 12V to 690V help provide electrical energy within hazardous area zone 1 and zone 2 (Gas) zone 21 and zone 22 (Dust), where it is most needed, for static and non-stationary electrical apparatus even with high requirements on the energy/power supply.

Technical data	
Certificate:	LCIE 02 ATEX 6068, LCIE 02 ATEX 0001U
Marking:	0722 $C \epsilon$
Apparatus category:	II 2GD
Marking of explosion protection:	II 2G Ex de IIC T6 II 2D Ex tD A21 T68ºC $\langle Ex \rangle$
Ambient temperature:	-40 ºC ≤ T≤ +55 ºC
Degree of protection:	IP 66
Impact resistance:	IK09
Material:	Socket/ 2P - 2P+E - 3P: polycarbonate Socket / 3P+E - 3P+N+E: SMC Plug, mobile socket, flush socket: polyamid
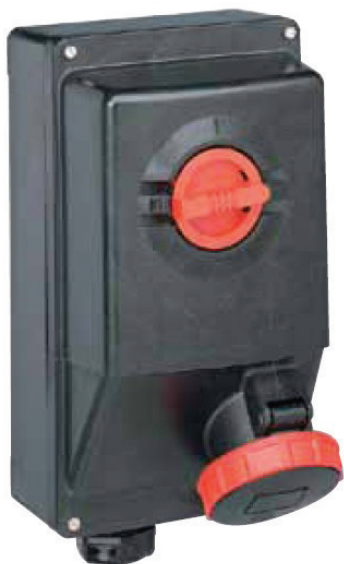
Plug	**Socket**	**Mobile Socket**	**Flush socket**
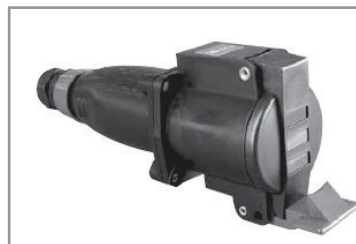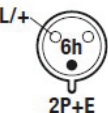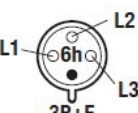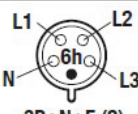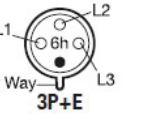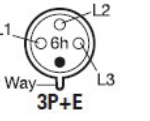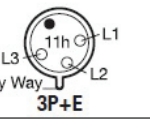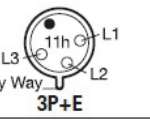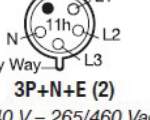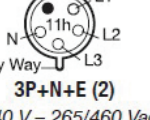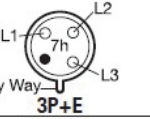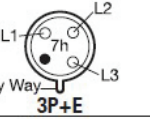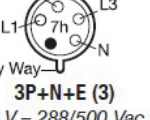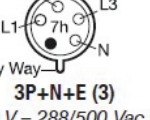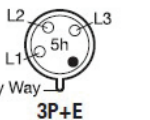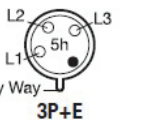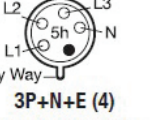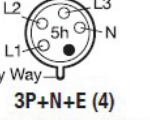
MODEL CODE / 16A

Desciption	Pin Configuration	Weight (kg)	Volume dm³	IECEX	NBR
Low Voltage: LV					
100/130 Vac 50/60 Hz — Yellow					
Wall Socket		0.6 (1.3)	3.8 (231.89)	**PRE316RY**	**NPRE316RY**
Plug	4h	0.2 (0.4)	0.6 (36.61)	**PRE316PY**	**NPRE316PY**
Mobile Socket	L/+	0.4 (0.9)	1.3 (79.33)	**PRE316MY**	**NPRE316MY**
Flush Socket	2P+E	0.2 (0.4)	1.3 (79.33)	**PRE316FY**	**NPRE316FY**
200/250 Vac 50/60 Hz — Blue					
Wall Socket	L/+	0.6 (1.3)	3.8 (231.89)	**PRE316RB**	**NPRE316RB**
Plug	6h	0.2 (0.4)	0.6 (36.61)	**PRE316PB**	**NPRE316PB**
Mobile Socket		0.4 (0.9)	1.3 (79.33)	**PRE316MB**	**NPRE316MB**
Flush Socket	2P+E	0.2 (0.4)	1.3 (79.33)	**PRE316FB**	**NPRE316FB**
200/250 Vac 50/60 Hz — Blue					
Wall Socket	L1 L2	1.5 (3.3)	4.7 (286.81)	**PRE416RB**	**NPRE416RB**
Plug	9h	0.6 (1.3)	0.6 (361.6)	**PRE416PB**	**NPRE416PB**
Mobile Socket	L3 key way	0.6 (1.3)	4.0 (244.09)	**PRE416MB**	**NPRE416MB**
Flush Socket	3P+E	0.2 (0.4)	1.3 (79.33)	**PRE416FB**	**NPRE416FB**
Wall Socket	L1 L2	1.6 (3.5)	4.7 (286.81)	**PRE516RB**	**NPRE516RB**
Plug	9h	0.3 (0.7)	1.3 (79.33)	**PRE516PB**	**NPRE516PB**
Mobile Socket	N L3	0.6 (1.3)	4.0 (244.09)	**PRE516MB**	**NPRE516MB**
Flush Socket	3P+N+E (1) _(1) 120/208 V - 144/250 Vac 50/60 Hz_	0.2 (0.4)	1.3 (79.33)	**PRE516FB**	**NPRE516FB**
380/415 Vac 50/60 Hz — Red					
Wall Socket	L2	1.5 (3.3)	4.7 (286.81)	**PRE416RR**	**NPRE416RR**
Plug	L1 6h	0.2 (0.4)	0.6 (361.6)	**PRE416PR**	**NPRE416PR**
Mobile Socket	L3	0.6 (1.3)	4.0 (244.09)	**PRE416MR**	**NPRE416MR**
Flush Socket	3P+E	0.3 (0.7)	1.3 (79.33)	**PRE416FR**	**NPRE416FR**
Wall Socket	L1 L2	1.6 (3.5)	4.7 (286.81)	**PRE516RR**	**NPRE516RR**
Plug	6h	0.3 (0.7)	1.3 (79.33)	**PRE516PR**	**NPRE516PR**
Mobile Socket	N L3	0.6 (1.3)	4.0 (244.09)	**PRE516MR**	**NPRE516MR**
Flush Socket	3P+N+E (2) _(2) 200/346 V - 240/415 Vac 50/60 Hz_	0.3 (0.7)	1.3 (79.33)	**PRE516FR**	**NPRE516FR**
480/500 Vac 50/60 Hz — Black					
Wall Socket		1.5 (3.3)	4.7 (286.81)	**PRE416RN**	**NPRE416RN**
Plug	7h	0.2 (0.4)	0.6 (361.6)	**PRE416PN**	**NPRE416PN**
Mobile Socket		0.6 (1.3)	4.0 (244.09)	**PRE416MN**	**NPRE416MN**
Flush Socket	3P+E	0.3 (0.7)	1.3 (79.33)	**PRE416FN**	**NPRE416FN**
50/500 Vac 300/500 Hz — Green					
Wall Socket	L3	1.6 (3.5)	4.7 (286.81)	**PRE516RG**	**NPRE516RG**
Plug	L2 2h	0.2 (0.4)	0.6 (361.6)	**PRE516PG**	**NPRE516PG**
Mobile Socket	L1 N	0.6 (1.3)	4.0 (244.09)	**PRE516MG**	**NPRE516MG**
Flush Socket	3P+N+E	0.3 (0.7)	1.3 (79.33)	**PRE516FG**	**NPRE516FG**

Desciption	Pin Configuration	Weight (kg)	Volume dm³	IECEX	NBR
100/130 Vac 50/60 Hz — Yellow					
Wall Socket		1.9 (4.19)	7.0 (427.17)	PRE332RY	NPRE332RY
Plug	4h L/+ 2P+E	0.5 (1.10)	4.0 (244.09)	PRE332PY	NPRE332PY
Mobile Socket		0.8 (1.76)	3.2 (195.28)	PRE332MY	NPRE332MY
Flush Socket		0.6 (1.32)	2.7 (164.76)	PRE332FY	NPRE332FY
200/250 Vac 50/60 Hz — Blue					
Wall Socket		1.9 (4.19)	7.0 (427.17)	PRE332RB	NPRE332RB
Plug	L/+ 6h 2P+E	0.5 (1.10)	4.0 (244.09)	PRE332PB	NPRE332PB
Mobile Socket		0.8 (1.76)	3.2 (195.28)	PRE332MB	NPRE332MB
Flush Socket		0.6 (1.32)	2.7 (164.76)	PRE332FB	NPRE332FB
Wall Socket		1.9 (4.19)	7.0 (427.17)	PRE432RB	NPRE432RB
Plug	L1 L2 9h L3 key way 3P+E	0.5 (1.10)	4.0 (244.09)	PRE432PB	NPRE432PB
Mobile Socket		0.8 (1.76)	3.2 (195.28)	PRE432MB	NPRE432MB
Flush Socket		0.6 (1.32)	2.7 (164.76)	PRE432FB	NPRE432FB
Wall Socket		1.9 (4.19)	7.0 (427.17)	PRE532RB	NPRE532RB
Plug	L1 L2 9h N L3 3P+N+E (1)	0.5 (1.10)	4.0 (244.09)	PRE532PB	NPRE532PB
Mobile Socket		1.0 (2.20)	4.0 (244.09)	PRE532MB	NPRE532MB
Flush Socket	(1) 120/208 V - 144/250 Vac 50/60 Hz	0.6 (1.32)	2.7 (164.76)	PRE532FB	NPRE532FB
380/415 Vac 50/60 Hz — Red					
Wall Socket		2.0 (4.41)	7.0 (427.17)	PRE432RR	NPRE432RR
Plug	L2 L1 6h L3 3P+E	0.4 (0.88)	4.0 (244.09)	PRE432PR	NPRE432PR
Mobile Socket		0.8 (1.76)	3.2 (195.28)	PRE432MR	NPRE432MR
Flush Socket		0.6 (1.32)	2.7 (164.76)	PRE432FR	NPRE432FR
Wall Socket		2.0 (4.41)	7.0 (427.17)	PRE532RR	NPRE532RR
Plug	L1 L2 6h N L3 3P+N+E (2)	0.5 (1.10)	4.0 (244.09)	PRE532PR	NPRE532PR
Mobile Socket		1.0 (2.20)	4.0 (244.09)	PRE532MR	NPRE532MR
Flush Socket	(2) 200/346 V - 240/415 Vac 50/60 Hz	0.6 (1.32)	2.7 (164.76)	PRE532FR	NPRE532FR
480/500 Vac 50/60 Hz — Black					
Wall Socket		2.0 (4.41)	7.0 (427.17)	PRE432RN	NPRE432RN
Plug	7h 3P+E	0.4 (0.88)	4.0 (244.09)	PRE432PN	NPRE432PN
Mobile Socket		1.0 (2.20)	4.0 (244.09)	PRE432MN	NPRE432MN
Flush Socket		0.6 (1.32)	2.7 (164.76)	PRE432FN	NPRE432FN

MODEL CODE / 63A

Desciption	Pin Configuration	Weight (kg)	Volume dm³	IECEX	NBR
200/250 Vac 50/60 Hz — Blue					
Wall Socket	L1 L2 9h L3 Key Way 3P+E	8.0 (17.64)	26.0 (1586.62)	PRE463RBU5	NPRE463RBU5
Plug		1.0 (2.20)	7.0 (427.17)	PRE463PB	NPRE463PB
380/415 Vac 50/60 Hz — Red					
Wall Socket	L2 L1 6h Key Way L3 3P+E	8.0 (17.64)	26.0 (1586.62)	PRE463RRU5	NPRE463RRU5
Plug		1.0 (2.20)	7.0 (427.17)	PRE463PR	NPRE463PR
Wall Socket	L2 L3 L1 6h N Key Way 3P+N+E (1) (1) 200/346 V – 240/415 Vac 50/60 Hz	8.0 (17.64)	26.0 (1586.62)	PRE563RRU5	NPRE563RRU5
Plug		1.0 (2.20)	7.0 (427.17)	PRE563PR	NPRE563PR
440/460 Vac 60 Hz — Red					
Wall Socket	L1 11h L3 L2 Key Way 3P+E	8.0 (17.64)	26.0 (1586.62)	PRE463RR1U5	NPRE463RR1U5
Plug		1.0 (2.20)	7.0 (427.17)	PRE463PR1	NPRE463PR1
Wall Socket	L1 11h L2 N L3 Key Way 3P+N+E (2) (2) 250/440 V – 265/460 Vac 60 Hz	8.0 (17.64)	26.0 (1586.62)	PRE563RR1U5	NPRE563RR1U5
Plug		1.0 (2.20)	7.0 (427.17)	PRE563PR1	NPRE563PR1
480/500 Vac 50/60 Hz — Black					
Wall Socket	L2 L1 7h L3 Key Way 3P+E	8.0 (17.64)	26.0 (1586.62)	PRE463RNU5	NPRE463RNU5
Plug		1.0 (2.20)	7.0 (427.17)	PRE463PN	NPRE463PN
Wall Socket	L2 L3 L1 7h N Key Way 3P+N+E (3) (3) 277/480 V – 288/500 Vac 50/60 Hz	8.0 (17.64)	26.0 (1586.62)	PRE563RNU5	NPRE563RNU5
Plug		1.0 (2.20)	7.0 (427.17)	PRE563PN	NPRE563PN
600/690 Vac 50/60 Hz — Black					
Wall Socket	L2 L3 L1 5h Key Way 3P+E	8.0 (17.64)	26.0 (1586.62)	PRE463RN1U5	NPRE463RN1U5
Plug		1.0 (2.20)	7.0 (427.17)	PRE463PN1	NPRE463PN1
Wall Socket	L2 L3 L1 5h N Key Way 3P+N+E (4) (4) 347/600 V – 400/690 Vac 50/60 Hz	8.0 (17.64)	26.0 (1586.62)	PRE563RN1U5	NPRE563RN1U5
Plug		1.0 (2.20)	7.0 (427.17)	PRE563PN1	NPRE563PN1

16A — 2P — 2P+E — 3P Versions

Wall Mounting Sockets

82.5 mm (3.25")
63.0 mm (2.48")
120.0 mm (4.72")
5.5 mm (0.22")
202.0 mm (7.95")
125.0 mm (4.92")
272.0 mm (10.71")
5.5 mm (0.22")
65.0 mm (2.56")
133.0 mm (5.24")

Plugs

152.0 mm (5.98")
49.5 mm (1.95")
58.0 mm (2.28")
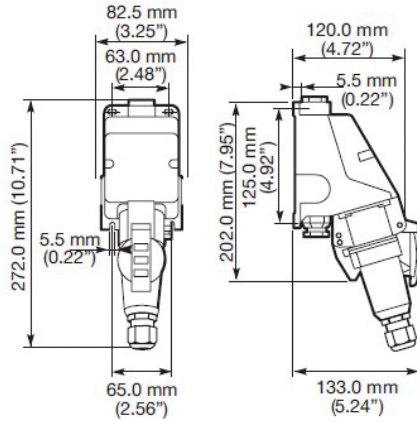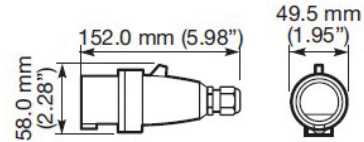
Mobile Sockets
Can be mounted on panel - 0.12"/3.0 mm thickness maximum
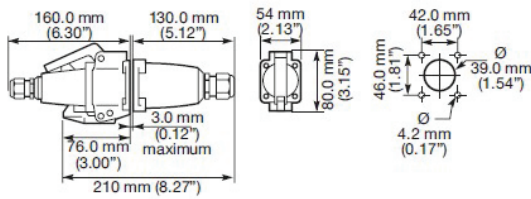
160.0 mm (6.30")
130.0 mm (5.12")
54 mm (2.13")
42.0 mm (1.65")
80.0 mm (3.15")
46.0 mm (1.81")
Ø 39.0 mm (1.54")
3.0 mm (0.12") maximum
Ø 4.2 mm (0.17")
76.0 mm (3.00")
210 mm (8.27")

Flush Sockets

42.0 mm (1.65")
54.0 mm (2.13")
160.0 mm (6.30")
46.0 mm (1.81")
Ø 39.0 mm (1.54")
80.0 mm 3.15"/
Ø 4.2 mm (0.17")
56.0 mm (2.20")
76.0 mm (3.00")

16A — 3P+E — 3P+N+E Versions

Wall Mounting Sockets

97.0 mm (3.82")
Fix. 80.0 mm (3.15")
145.0 mm (5.71")
140.0 mm (5.51")
240.0 mm (9.45")
Fix. 105.0 mm (4.13")
310.0 mm (12.20")
Ø 6.0 mm (0.24")

Plugs

B
A C

Dimensions in Millimeters (Inches)		
A	B	C
3 P + E		
66.0 (2.60)	154.0 (6.06)	55.5 (2.19)
3 P + N + E		
73.0 (2.87)	166.0 (6.54)	62.0 (2.44)

Mobile Sockets
Can be mounted on panel - 3.0 mm (0.12") thickness maximum

160.0 mm (6.30")
150.0 mm (5.91")
68.0 mm (2.68")
56.0 mm (2.20")
90.0 mm (3.54")
Ø 49.5 mm (1.95")
3.0 mm (0.12") maximum
Ø 4.2 mm 0.17"
76.0 mm (3.00")
230.0 mm (9.06")

Flush Sockets

56.0 mm (2.20")
68.0 mm (2.68")
160.0 mm (6.30")
60.0 mm (2.36")
Ø 49.5 mm (1.95")
90.0 mm (3.54")
Ø 4.2 mm 0.17"
56.0 mm (2.20")
76.0 mm (3.00")
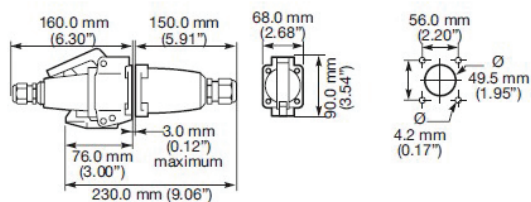
DIMENSION / 32A

32A — 2P+E — 3P+E — 3P+N+E Versions

Wall Mounting Sockets
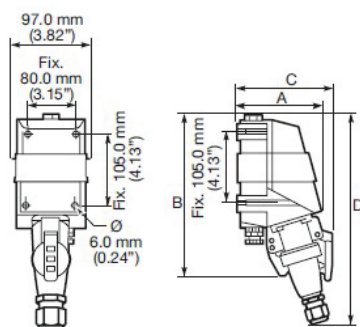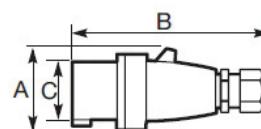
Dimensions in Millimeters (Inches)			
	A	B	C	D
2 P + E	140.0 (5.51)	275.0 (10.83)	155.0 (6.10)	370.0 (14.67)
3 P + E	140.0 (5.51)	275.0 (10.83)	155.0 (6.10)	370.0 (14.67)
3 P + N + E	140.0 (5.51)	275.0 (10.83)	165.0 (6.50)	375.0 (14.76)

Plugs

Dimensions in Millimeters (Inches)		
	A	B	C
2 P + T	80.0 (3.15)	170.0 (6.69)	67.0 (2.64)
3 P + T	80.0 (3.15)	170.0 (6.69)	67.0 (2.64)
3 P + N + T	80.0 (3.15)	195.0 (7.68)	74.0 (2.91)

Mobile Sockets
Can be mounted on panel - 3.0 mm (0.12") thickness maximum
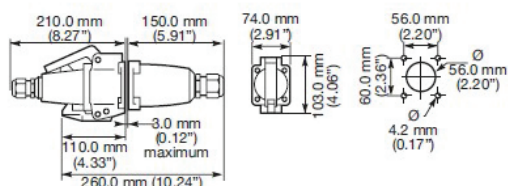
Flush Sockets
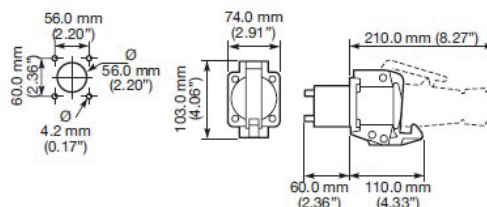
DIMENSION / 63A
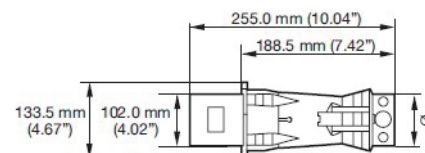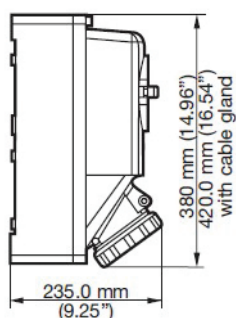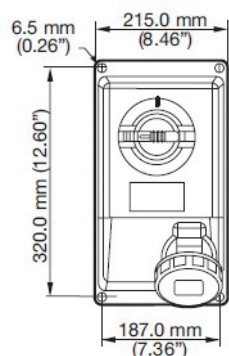
Controls

We offer local control stations for use in areas with flammable gases and dusts. Depending on the application area, the control stations are designed with the type of protection "Increased safety" or "Protection by enclosure". The explosion-protected local control stations are available in aluminium, polyester or stainless steel. When selecting the version, it is possible to choose between a cabinet with door and an enclosure with screw cover.

Control, signalling and display devices and remote I/O systems are installed according to customer specifications.

The installation of industrial standard equipment in controls for Zone 21, type of protection "Protection by enclosure" is possible. The control elements can also be mounted on a mounting rail or in the front wall. Free installation areas can be designated for the subsequent installation, which are then sealed using blanking plugs. All explosion-protected local control stations are supplied prewired on terminals.

Fields of application: Chemical and petrochemical industry, process and plant engineering, pharmaceutical and food industry, OFF SHORE areas.

Measurement
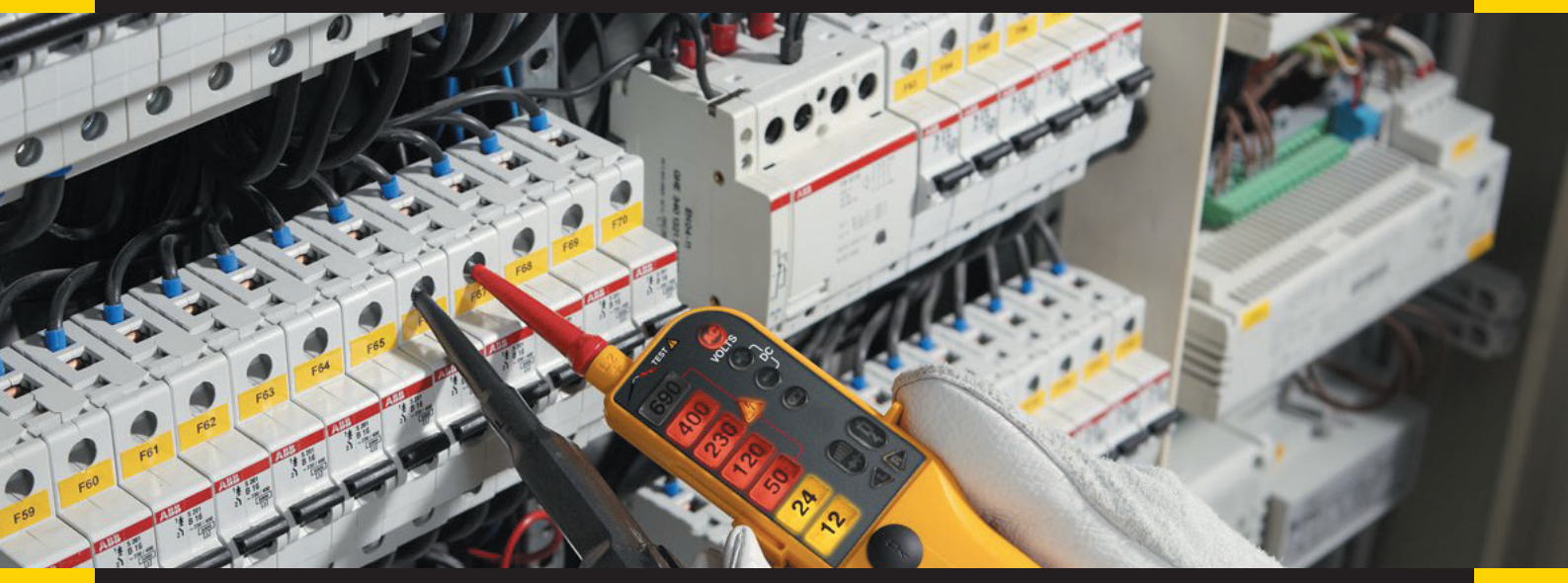
In order to have a system running correctly, there are parameters that need to be measured periodically or all the time.

We offer wide range of gas flow, temperature, humidity, electricity & other parameters measuring devices.

Other products
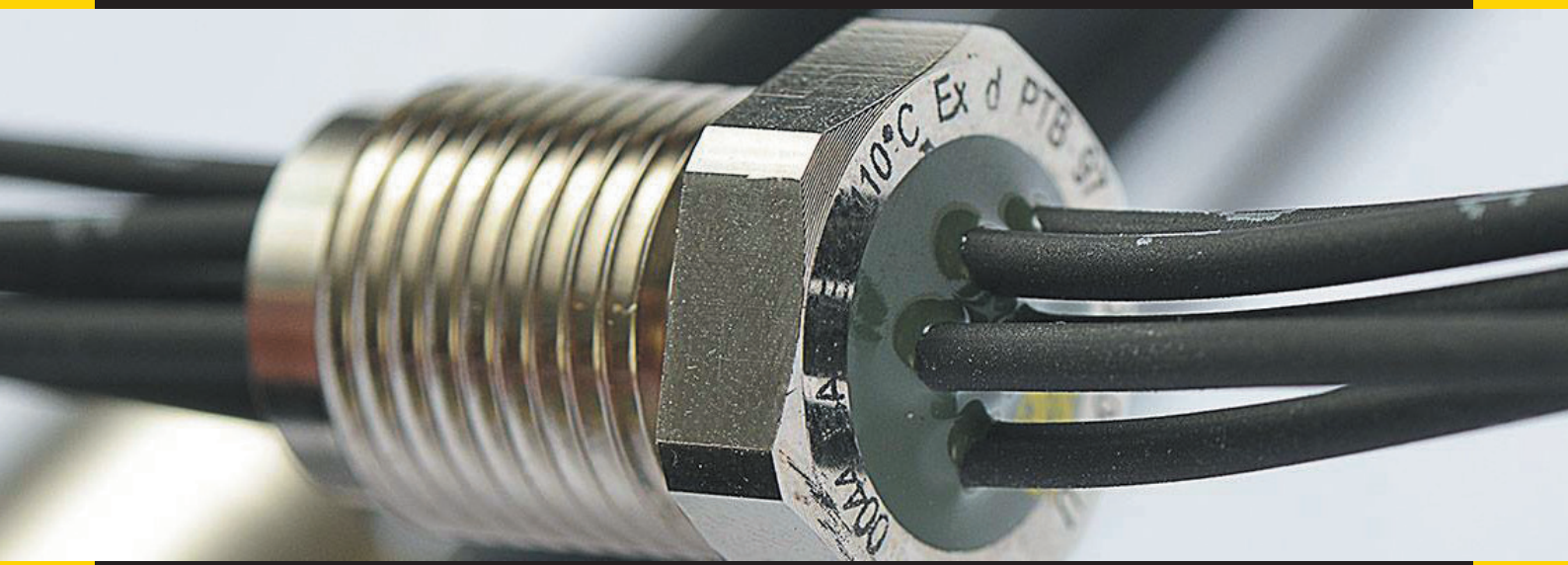
Apart from all earlier specified product groups, our portfolio also offers various types of adapters, bushings, electronic ballasts, cable glands, mobile lighting equipment & accessories, signal horns, signal bells, explosion proof telephones, etc.

Adapter Zone 1, 2, 21, 22
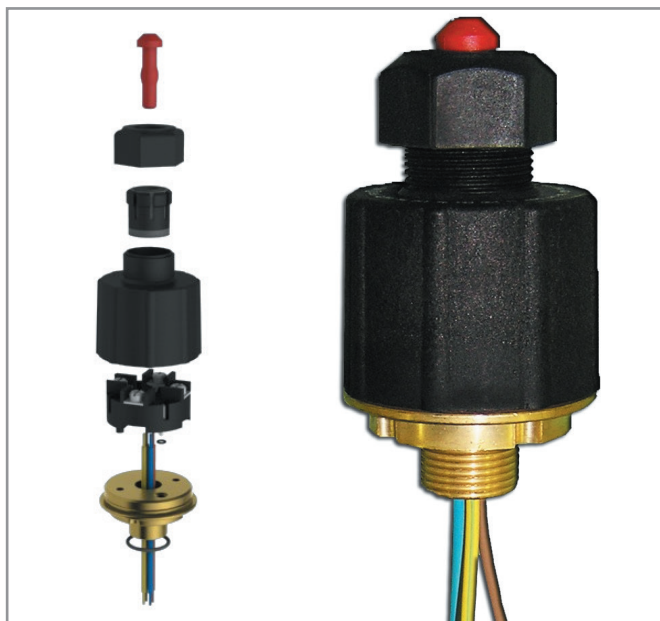
APPLICATION

Explosion proof adapter ADP2. is intended for electrical connection between Ex d enclosure
and Ex e adapter terminal without usage of the special Ex d cable glands. Ex adapter is intended for use in places with an explosive gas and dust atmosphere, in the industrial areas and facilities, indoor and outdoor spaces.

CONSTRUCTION

Bushing with outer thread (M20, NPT 1/2", BSP 1/2") and cemented wiring makes enclosure of adapter on which cable terminal is mounted. The space with cable terminal is sealed in adapter enclosure. Cable gland M25, type SPU 25 is mounted on adapter enclosure.

Technical data	
Certificate:	CESI 09 ATEX 068U
Marking:	0722 CE
Apparatus category:	II 2G II 2D
Marking of explosion protection:	Ex de IIC Ex tD A21 IP66
Service temperature:	-20 °C ≤ T ≤ +60 °C
Degree of protection:	IP 66
Rated voltage Ue:	400 V AC
Rated current Ie	16A
Connection terminal:	L1, L2, L3, N, PE , 2 x max.2,5 mm²
Adapter wiring:	2 / 3 / 4 x 1,5 mm RADOX 155
Adapter thread:	M 20x1,5-6g according to ISO 965-1, ISO 965-3 G 1/2 according to ISO 228-1 1/2" NPT according to ANSI/ASME B1.20.1
Cable gland:	For cable 6-15 mm
Dimension:	52x85mm

Model code		
TYPE	WIRING	WIRE LENGHT (Ex d side)
ADP 22	2x1.5mm² ;black, black	
ADP 23	3x1.5mm² ; brown, blue, yellow-green	200 mm
ADP 24	4x1.5mm² ; black, brown, blue, yellow-green	

Other configurations available on request

Bushing Zone 1, 2

APPLICATION

Explosion proof multiwire bushing RSM/.. is Ex d component used for electrical connection between Ex d enclosures or between Ex d enclosure and Exe terminal box.

The bushing is described by the model code depending on the thread size, number and cross section of the wires.

It is intended for use in places with an explosive gas and dust atmosphere, in mines susceptible to fire-damp

Technical data	
Certificate:	CESI 09 ATEX 068U
Marking:	0722 $\quad$ C E
Apparatus category:	I M2 II 2G
Marking of explosion protection:	Ex d I Mb Ex d IIC Gb
Service temperature:	-20 °C ≤ $T_{service}$ ≤ +95 °C
Rated voltage U_e:	1000 V AC
Rated current I_e:	Determined by technical data of device
Wire:	- rated cross-section 1,5 - 35 mm² - type RADOX 155 or BETAtherm 155 IEC 60228 class 5

Model code					
TYPE	NUMBER AND CROSSSECTION OF WIRES	SIZE OF THREAD/ THREAD LENGTH (mm)	KEY SIZE AF/ BUSHING LENGTH (mm)	WIRE LENGTH (THREAD SIDE) (mm)	TOTAL WIRE LENGTH (mm)
RSM 04	6x1,5mm²	M25x1,5 - 6g / 14,5	OK30 / 30	150	330
RSM 05	8x1,5mm²	M25x1,5 - 6g / 14,5	OK30 / 30	150	330
RSM 07	6x4mm²	M33x1,5 - 6g / 14,5	OK36 / 30	300	530
RSM 08	6x6mm²	M33x1,5 - 6g / 14,5	OK36 / 30	300	530
RSM 10	6x10mm²	M36x1,5 - 6g / 14,5	OK41 / 30	300	530
RSM 11	6x16mm²	M36x1,5 - 6g / 14,5	OK41 / 30	300	530
RSM 13	6x25mm²	M42x1,5 - 6g / 14,5	OK46 / 30	200	430
RSM 14	6x35mm²	M42x1,5 - 6g / 14,5	OK46 / 30	200	430

Other configurations available on request

Electronic ballast Zone 1, 2

APPLICATION

The electronic ballast SMP 07 is intended for explosion proof applications. The electronic ballast are intended for use in places with an explosive gas atmosphere.

The SMP ballast meets all requirements of EN 60079-0:2009, EN 60079-7:2007, EN 60079-18:2009 and related industrial standards.

CONSTRUCTION

SMP 07 enclosure: plastic PA6

Technical data	
Certificate:	EXA 13 ATEX 0016 U
Marking:	0722 $C\,\epsilon$
Apparatus category:	II 2G
Marking of explosion protection:	Ex e mb IIC T4 Gb ⟨Ex⟩
Ambient temperature:	-25 °C ≤ T_{amb} ≤ +70 °C
Degree of protection:	IP 20
Rated voltage Ue:	220-240 V ±10%
Frequency:	50-60 Hz
Protection class:	I (protective earthing)
Lamps type:	Fluo lamps T8 1-2 x 18/36/58W, in parallel configuration
Power factor:	~0.95
BLF - Ballast lumen factor:	~ 97 %
Estimated service life:	100 000 hours at T_{amb}=65˚C 60 000 hours at T_{amb} =70˚C
Connection terminal:	1,0-2.5mm² solid, stranded, flexible , PE terminal
Weight:	SMP 07 - 0,8 kg
With overcurrent, overvoltage and overtemperature protection	

Model code			
TYPE	LAMP TYPE	Dimension A	Dimension B
SMP 07/11	1 x 18/36W T8	218	195
SMP 07/12	2 x 18/36W T8	218	195

Cable glands Zone 1, 2, 21, 22
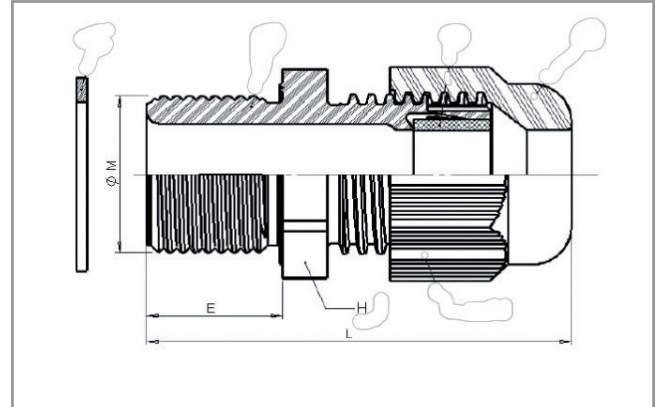
PLASTIC Ex e CABLE GLANDS	
Apparatus category:	II 2GD
Marking of explosion protectoin	Ex e
Ambient temperature:	-35 °C ≤ T_{amb} ≤ +95 °C
Degree of protection:	IP 68
Material:	Polyamide/neopren

Model code						
THREADS	CLAMPING RANGE	H (mm)	E (mm)	L (mm)	RAL 5012	RAL 9005
M12	4,0 - 6,0	15	15	39	F7431200E	F8031200E
M16	6,0 - 10,0	22	15	44	F7431600E	F8031600E
M20	7,0 - 12,0	24	15	45	F7432050E	F8032050E
M25	10,0 - 18,0	33	15	53	F7432500E	F8032500E
M25	6,00 - 15,0	33	15	53	SPU 25 B	SPU 25
M32	17,0 - 24,0	42	15	57	F7433200E	F8033200E
M40	17,0 - 31,0	53	16	68	F7434000E	F8034000E
M50	24,5 - 37,0	50	16	74	F7435000E	F8035000E
M63	34,0 - 47,0	70	16	72	F7436300E	F8036300E

Torchlights Zone 1, 2

APPLICATION

Explosion protected torchlights type HF9 BASIC are designed for inspection and maintenance work in industrial areas and facilities, also outdoor spaces with an explosion hazard of gases, vapors mixed with air. Hazardous zones: 1,2.

Technical data	
Certificate:	BVS 11 ATEX E 087
Marking:	CE
Apparatus category:	II 2G
Marking of explosion protection:	Ex e ib IIC T4 Gb Ex
Ambient temperature:	-20 °C ≤ T≤ +40 °C
Degree of protection:	IP 65
Lamp type:	4,0V/0,82A halogen
Length of light beam:	32 m
Battery:	Li-Ion 3,75V/4.8Ah
Autonomy:	app 5 hours
Weight	0,75 kg (with battery)
Charger:	Plug-in 100-240V, 50/60Hz, 6W Charging time: app 14 hours
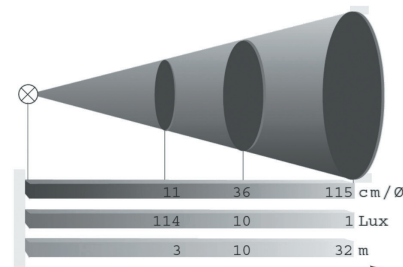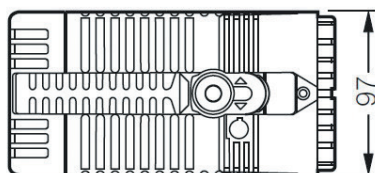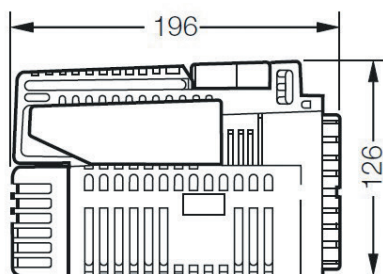
Signal horns Zone 1, 2, 21,22

APPLICATION

Loud signal horn with typical horn tone. For use in explosion endangered areas of zone 1 and 2. Modular system with synthetic housing made of glass-fibre reinforced polyester. Flameproof chamber „d" – terminal connection chamber in protection class increased safety „e". Lower weight – robust and corrosion proof design Insulation class II – no equipotential bonding required.

Technical data	
Certificate:	ATEX
Marking:	$C\,\epsilon$
Apparatus category:	II 2G
Marking of explosion protection:	II 2 G Ex d e IIC T5, T6 Gb II 2 D Ex tb IIIC T95˚C, T80˚C Db 〈Ex〉
Service temperature:	-25 ºC ≤ T$_{service}$ ≤ +75 ºC
Degree of protection:	IP 66
Rated voltage:	6V AC/DC ÷ 220V AC/DC
Terminals:	2,5mm²
Protection class:	I (protective earthing))
Cable entries:	1 x cable gland M20x1,5 , 1 x plug M20 x1,5
Weight:	5,5 kg

mounting bracket 4VA stainless

CE ⟨Ex⟩ ATEX -20 +70

APPLICATION

Explosion protected signal horn type mHPT is intended for use in places with an explosive gas atmosphere, in the industrial areas and facilities, indoor and outdoor spaces.

Housing made of impact resistant synthetics.

IP 54 | - 20 °C +70 | 108 dB

Technical data	
Certificate:	ATEX
Marking:	CE
Apparatus category:	II 2G
Marking of explosion protection:	Ex e mb IIC T5 IP66 ⟨Ex⟩
Service temperature:	-25°C ≤ $T_{service}$ ≤ +60°C
Degree of protection:	IP 54
Rated voltage:	24 V DC, 115 V AC, 230 V AC
Terminals:	2,5mm²
Protection class:	I (protective earthing))
Cable entries:	1 x cable gland M20x1,5
Weight:	1,5 kg
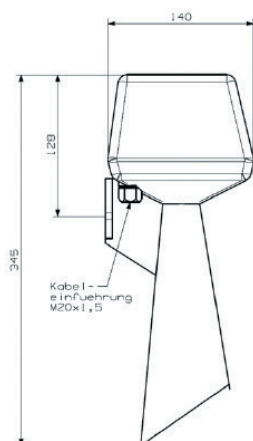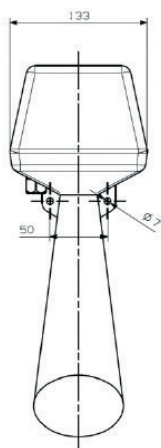
Signal bell Zone 1, 2, 21, 22

APPLICATION

Explosion protected signal bell type dHW, is intended for use in places with an explosive gas and dust atmosphere, in the industrial areas and facilities, indoor and outdoor spaces. Modular system with synthetic housing made of glassfibre reinforced polyester

Technical data	
Certificate:	ATEX
Marking:	CE
Apparatus category:	II 2G
Marking of explosion protection:	Ex de IIC T6 Ex tD A21 T80°C
Service temperature:	-25°C ≤ T $_{service}$ ≤ +40°C
Degree of protection:	IP 66
Rated voltage:	6V AC/DC ÷ 220V AC/DC
Terminals:	1,0 - 2,5mm²
Protection class:	I (protective earthing))
Cable entries:	1 x cable gland M20x1,5 , 1 x plug M20 x1,5
Weight:	6,0 kg
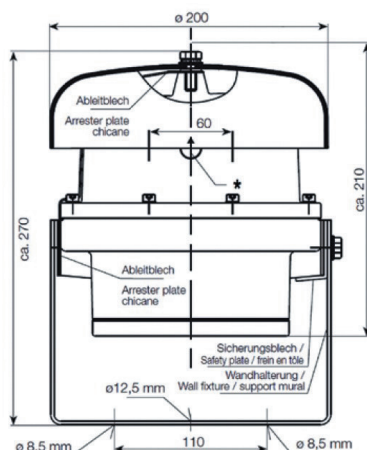
Telephone Zone 1, 2, 21, 22

APPLICATION

Explosion protected telephone type dST1 is intended for use intended for use in places with an explosive gas and dust atmosphere, in the industrial areas and facilities, indoor and outdoor spaces.

- weatherproof telephone for industrial areas in rugged ambient conditions
- very robust impact protected telephone housing (impact protection IK 09)
- freely programmable, well readable alphanumerical display
- model without keypad available as emergency telephone
- comfort telephone functions as in office communication
-ringing sound pressure level approx 90dB(A) in 1m
- 10 ringing tone melodies selectable
- listening by loudspeaker: max. 70 dB (A) in 1 m - telephone directory - max. 50 entries (names and numbers)

Technical data	
Certificate:	ATEX
Marking:	CE
Apparatus category:	II 2G
Marking of explosion protection:	Ex em [ib] IIC T6 IP66 ⟨Ex⟩
Ambient temperature:	-25 °C ≤ T ^{amb} ≤ +60°C
Line voltage:	24 V DC - 66 V DC
Ringing voltage:	90 VAC 25/50 Hz
Resistence to shock:	IK 09
Degree of protection:	IP 66
Ringing sound pressure level:	90 dB in 1 m, 2.4kHz, 10 ringing tone melodies selectable
Terminals:	4mm²
Cable entries:	1 x cable glands M20x1,5 , 1 x plug M20 x1,5
Dialing system:	PD-DTMF
Enclosure:	Polyester with glass fibre
Keypad:	metallic, / 21 buttons
Weight:	5.5 kg

HVAC

SAVE
ENERGY

EASY
FOR
YOU

We are proud to present you European leading HVAC systems manufacturer – AL-KO Therm Germany.

Ideal temperature, humidity and hygienic quality of air – AL-KO creates a comfortable atmosphere in reception areas for people, and ensures the correct process air in production facilities, clean room environments, research, and in the operating theatre – throughout the world and in all climate zones.

Highest efficiency and reliability, lowest noise emissions - these qualities are what distinguish AL-KO extraction systems from the rest.

From mobile raw air dust extractors through to stationary clean air dedusting with heat recovery, all models boast long filter service life, maximum energy efficiency and a perfectly conceived technology.

ATEX – explosion protection for the highest safety

The explosion protection of our units is committed to a maximum protection function. Reliability and employee safety always have priority. The design of our units consistently conforms to the EU Guideline ATEX 95 (100a) for the intended use in potentially explosive rooms and buildings or for the general increase in safety of injuries to persons or damage to property.
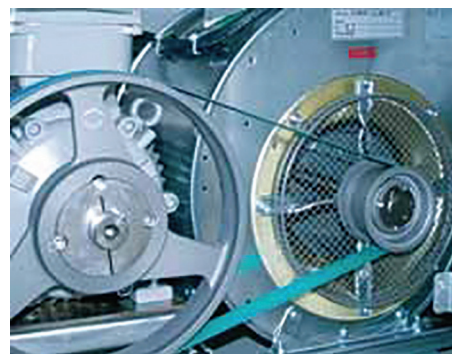
Production safety through maximum unit quality

Together we are working for the right solution

designs compliant with ATEX 95
specialised coatings for every application
process-oriented hygiene solutions

AL-KO

Air-handling-units for the pharmaceutical sector

The pharmaceutical development and production of synthetic or biotech substances and their formulation (galenics) place extremely high demands on the design and function of air-handling-units. This is true for the sectors of both "bench engineering" and largescale production.

With its AT4 and AT6 unit series, AL-KO Air-Technology offers a modular system that fulfils all of the requirements of the pharmaceutical industry:

- the highest level of hygiene design
- easy, quick and complete cleanability
- precisely targeted application to the process requirements
- precision of thermal air-handling
- durability and longevity
- operational and process safety

A few of the special structural features of the AT4 and AT6 unit series:

- entirely smooth inner surfaces without under-cuts and cavities thanks to patented housing construction
- free and complete access to all functional units and components through optimised supply and exhaust chambers
- can be fully inspected from outside through mandatory large sight glasses and internal lighting
- extremely high resistance to housing leakage F9 in compliance with EN 1886
- extremely high corrosion protection through adapted material selection at all quality levels of stainless steel
- low operating costs due to optimised fan units and minimised pressure losses
- performance certification in compliance with EUROVENT
- hygiene certifi cation in compliance with VDI 6022, DIN 1946 and VDI 3803
- ATEX certification zone 21 and 22

Air-handling-units for the chemical sector

All areas of the chemical process chain, from the laboratory through technical production, in the sectors of development, synthesis and analysis place extremely high demands on the design, function and durability of the involved air-handling-units.

With its AT4 and AT6 unit series, AL-KO Air-Technology offers a modular system, that fulfils all of the requirements of the chemical industry:

- resistant to almost all substances and gaseous combinations of substances
- client-specific application in compliance with process requirements
- easy, quick and complete cleanability
- precision of thermal air-handling with regard to temperature, humidity and airflow
- durability and lasting quality
- energy efficiency
- operational and process safety

A few of the special structural features of the AT4 and AT6 unit series:

- extremely high corrosion protection and durability through adapted material selection at all quality levels of stainless steel
- surface textures available in powder coating, epoxy resin coating, and wetlacquer coating
- fully explosion-protected designs
- extremely high resistance to housing leakage F9 in compliance with EN 1886
- low operating costs due to optimised fan units and minimised pressure losses
- entirely smooth inner surfaces without undercuts and cavities thanks to patented housing construction
- free and complete access to all functional units and components through mandatory operating doors and optimised supply and exhaust chambers
- can be fully inspected from outside through mandatory large sight glasses and internal lighting
- performance certification in compliance with EUROVENT
- hygiene certification compliant with VDI 6022 DIN 1946 and VDI 3803
- ATEX certification zone 1 and 2

ATEX 95 unit categories

AT4-classification

Unig group	Type of ignition protection	Temperature class

CE ⟨Ex⟩ II 2^G/D c IIC T4 (x)

Unit category	Explosion group	Special conditions
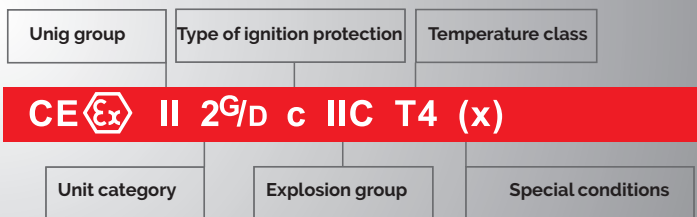
According to the ATEX guideline (94 / 9 /˝EG), nits are grouped into categories for use in the orresponding zones. There are three different unit categories for the unit group II, which cor-responding to the different zones. This makes it possible to associate explosion-proof products with operational Ex zones.

Category 1 includes Units for zones 0 and 20 (very high degree of safety).

Category 2 includes Units that are structurally designed so that they can be operated in compli-ance with the parameters furnished by the manu-facturer and assure a high degree of safety. Units of this category can, upon approval, be operated in zones 1 and 21.

Category 3 includes Units that are structurally designed so that they can be operated in compli-ance with the parameters furnished by the man-ufacturer and assure a normal degree of safety. Units of this category can, upon approval, be op-erated in zones 2 and 22. DIN EN 50281-1-2 dif fer-entiates between conductive and nonconductive dust. When there is conductive dust in zone 22, equipment from category 2 D must be used.

EX-suitable Unit components

- EX models of direct-driven fans for zone 1 to T4 or 21 to T 120 ˚C combined with a pressure-tight encapsulated motor
- belt-driven EX fans for only zone 2 and tem-perature class T3!
- electrically conductive fan drive belt
- flexible connection made of electrically con-ductive material
- air filter cannot be statically charged
- for Explosionsgroups (IIA – IIC)
- inspection portholes made of glass
- drip eliminator cannot be statically charged – new development
- all electrical components ATEXcertified, all mechanical components with manufacturer confirmation
- unit construction is completely earthed
- earthing of louvre damper vanes
- run around coil system or plate heat exchanger can be used for heat recovery

Unit design 1

Unit situated inside the EX-zone

- dischargeable flexible connection
- earthed damper vanes
- electrically conductive filter G4 – H13
- heat recovery provided by a run around coil system or heat recovery
- electrically conductive droplet eliminator
- EX models of direct-driven fans for zone 1 to T4 or 21 to T 120 °C combined with a pressure-tight encapsulated motor
- belt-driven EX ventilators only for zone 2 and temperature class T3
- drive motor encapsulated in pressure tight fashion with FC
- frequency converter operation
- sound absorber
-weatherproof grille at exhaust

	Ex-zone boundary		
Exhaust air unit			Exhaust air unit
EX-ZONE 1/2 or 21/22		Tightliy sealed damper	EX-ZONE 1/2 or 21/22
Intake air unit		Intake air unit	Ex-zone boundary
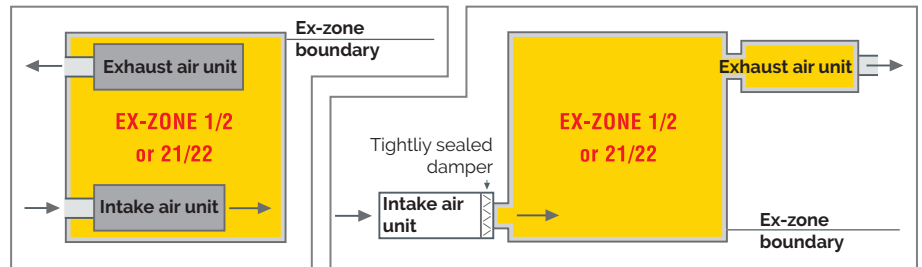
Unit arrangement

Intake and exhaust air unit situated inside the EX-zone

- intake and exhaust air units must be EX-models
- all electrical components must be EX- models

Intake and exhaust air unit situated outside the EX-zone

- exhaust air unit must be an EX-model
- intake air unit (EX-model not required) with louvre damper at air outlet to prevent return flow
- electrical components situated outside the EX-zone do not have to be EX-models

Unit design 2

Exhaust air unit situated outside EX-zone
Same components as in unit design 1
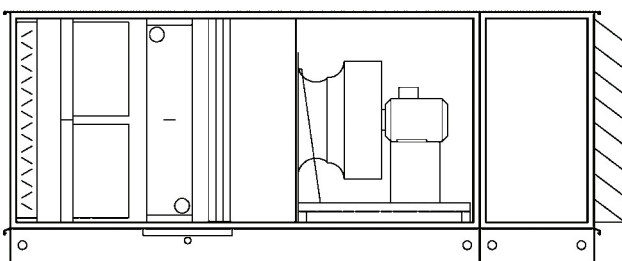
for zone 1, T3 to T4,
or zone 21 to T 120 °C
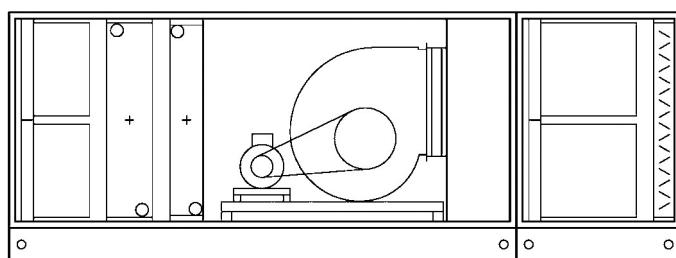
for zone 2, T3

System components and applications

Rotary heat exchanger

- Optimized energy recovery
- Particularly suitable for variable air flows
- Compact construction

Applications:
- Schools, offices, administrative buildings
- Club houses, function rooms
- Shops
- Sport halls

Plate heat excharger

- Supply and exhaust air is completely separated (no cross flow contamination)
- Optimized energy recovery
- Reduced maintenance costs

Applications:

- Exhaust air for toilets
- Locker rooms
- Medical buildings, health centres
- Retirement homes

Fan with EC motor

- Maximum motor efficiency
- Compact construction
- Integrated vibration decoupling
- Energy efficient operation
- Extended life cycle
- Low maintenance costs

The modern motor technology of t he EASYAIR® air handling units ensures quiet and energy efficient operation in all applications.

Note: Due to the separati on of the suppl y and exhaust air, the application of plate heat exchangers for hygienic systems is possible without any restrictions.

Unit execution and options

EnEV 2009 (energy saving regulation) EASYAIR® air handling units are manufactured and designed according to the European Guideline EnEV 2009.
It must be also highlighted that due to the high efficiency of the heat recovery (80 – 90 %), due to the most energy efficient motor technology for the fans and due to the intelligent control of all components all EASYAIR® air handling units are actually better than the todays requirements of the EnEV 2009.

VDi 6022 (hygienic requirements)

All EASYAIR® air handling units are manufactured and designed according to the European Guideline VDI 6022. The casings of all EASYAIR® air handling units are powder-coated on both sides. Other component s are made from galvanized steel. All EASYAIR® air handling units warrantees full access for service and maintenance in accordance with the VDI 6022.

Heat recovery

Selection can be done between rotary or plate heat exchanger. Rotary heat exchangers are preferred when recirculating air operation is possible. To prevent cross-flowcont amination between supply and exhaust air, the use of plate heat exchangers is recommended.

RO- = with **ro**tary heat exchanger
PL- = with **pl**ate heat exchanger

Unit sizes

Both types of heat recovery units are available in various sizes. For each size, with their optimized air volumes, please refer to page 4 and 5.

RO-04 = Size 04, for air volume between 2.000 to 5.100 m³/ h.

Sample for selection is done by choosing an EASYAIR® with rotary heat exchanger (RO-), size 04 (RO- 04).

Service side

Of course, you can easily select the service side of the EASYAIR® Doors ensure good access for maintenance and service works. The indication for the service side is always based on the direction of the supply air. The ser vice side in supply air direction right conforms to the demonstration given on page 4 and 5.

RO- 04-R = Service side in supply air direction **right**
i RO- 04-L = Service side in supply air direction **left**

Split and outdoor execution

From unit size 04, there is the possibility to order EASYAIR® in a split execution. Thus, the air handling unit can be installed very easily, even e.g. when the access openings are limited. Please refer to the dimension table on page 4 and 5. All EASYAIR® units can be ordered for outdoor installation as a weatherproof unit. Weatherproof units are only available in one part and have a weather-proof roof with drip tray. As an option, weatherproof units are available with an intake and exhaust hood.

RO-04-R-X = Casing in non-split execution
RO- 04-R-T = Casing in split execution
RO- 04-R-W = Casing for outdoor installation
RO- 04-R-W = Casing for outdoor installation with an intake and exhaust hood

Filter classes

As standard, the EASYAIR® is supplied with high efficient air filters. In the supply air there is a F7 and in the exhaust air there is a F5 filter installed. The quality of the filters are according to VDI 6022.

RO- 04-R-X-75 = Supply air F7, exhaust air F5
RO- 04-R-X-E75 = Supply air F7, exhaust air f5 incl. spare filters

Dampers

The EASYAIR® is supplied with internal, air tight dampers (tightness class 2). One damper at the air inlet for outside air and one damper at the air outlet for exhaust air. Thus, no additional dampers are required to be installed in most of the applications in the supply and/or exhaust air duct. The internal dampers are supplied with actuators. A further advantage: No additionally thermal insulation is required. As an alternative, you can get the EASYAIR® also without these internal ampers.

RO- 04-R-X-75-MK = **with** internal dampers
RO- 04-R-X-75-OK = **without** internal dampers

EASY**AIR**®

Duct connections

For all EASYAIR® air handling units acoustically isolated duct connections are available that utilize the complete open cross-section of the unit. Using these duct connections, the duct of the EASYAIR® air handling unit is well isolated against the transmission of sound and vibration. External noise transmission is subst antially reduced.

RO-04-R-X-75-MK-Z = with duct connections
RO- 04-R-X-75-MK-0 = without duct connections

Control

The EASYAIR® air handling units have an integrated controller as standard. All internal components of the units are prewired and ready for use.
An exhaust air temperature sensor in combination with heating and cooling coil warrantees a constant supply air temperature. Many energy efficient control functions are integrated in the software and easy to extend by using additional options.

The available options are as follows:

-RA = Room sensor
-**DK** = Constant pressure control
-VK = Constant air volume control
-AQ = AL-KO air quality control in the exhaust duct
-RC = Remote control with 10m cable
-BL = Bus module LON
-BM = Bus module Modbus
-BB = Bus module Bacnet/Ethernet
CX = Without control

Note: The measurement values (data points) and communication commands are permanently configured and are independent of the Bus module and cannot be changed.

Without control: All field devices are wired for easy connection to an on-site controller, on a terminal strip. Therefore, there is no wiring required in the unit on-site. Furthermore, a main switch for all -phase switching is installed on the unit. The power fuse is not included in the design and must be supplied on site. For EASYAIR® units with rotary heat exchanger, the connections of the drive motor are supplied through the terminal strip. The unit has no integrated rotor control. Only a rotor drive with integrated speed set point input is provided. The operation is additionally monitored using a potential-free (closing) contact fed through the terminal strip.

AIRQUALITIZER®
the energy saving system

The AL-KO air quality controller AIRQUALITIZER® is super vising the quality of the exhaust air. If this sensor detects odours or emissions in the exhaust air (VOC = Volatile Organic Compounds), the quantity of air is increased and, within a short period of time, you will have a good quality of air in the room again. If there are e.g. only a few people in the room, the AIRQUALITIZER® can reduce the air volume (partial load operation) and you save operating costs. By using this intelligent air flow management, only the required air flow is conveyed.

Electric air heater (option)

An electric air heater can be connected to each EASYAIR® (up to unit size -06). This electric air heater is directly installed on the air outlet and is available with a rating between 3 and 15 kW. During a few days with low outside air temperatures, you can slightly increase the room temperature till desired temperature has been reached.
ELE = with electric air heater

Hot water air heater (option)

Each EASYAIR® can be supplied with a hot water air heater. This heater is directly installed at the air outlet. Here, you also have the simple option to slightly increase the room temperature during cold weather conditions and to provide a comfortable room temperature. Heater includes frost protection.
-WWE = with hot water air heater (LPHW)

Heater/cooler module (option)

For demanding applications, you can also connect an additional module to the EASYAIR® (refer to page 4 and 5). In this module you will find all accessory that you require for a wide range of application for cooling and heating. The module is equipped with a drip separator.

-WKE = module with heater (LPHW), cooler (LPCW) and drip separator

EASYAIR®

Compact appliances for Painting and Drying

Description of units

Compact units series AT4 – Painting and Drying (AT4 – PD) are designed for application in the spraying and drying booths. Equipment design is carried out using three modules:
- Heat exchanger components
- Components for fresh air/circulating air supply with integrated filter
- Components for exhaust air with change-over hatch

Circulating air or supply / exhaust air mode can be selected as an option by using a change-over hatch. In circulating air mode, the exhaust air fan switches off. The supply air portion can be adjusted during the drying phase by an adjustable fresh air hatch (this hatch is set once when the plant is commissioned and then locked by a locking device).

Advantages:

- balanced heating and air volume flow
- compatible modules
- long service life
- lower energy consumption due to high furnace efficiency
- easy assembly
- easy to maintain
- lower noise level

Operating point adjustment

For more than 45 years AL-KO manufactures process air appliances with free-wheeling fan rotors. In order to obtain the operating point adjustment and optimum energy saving of the fans, frequency converters must be used.
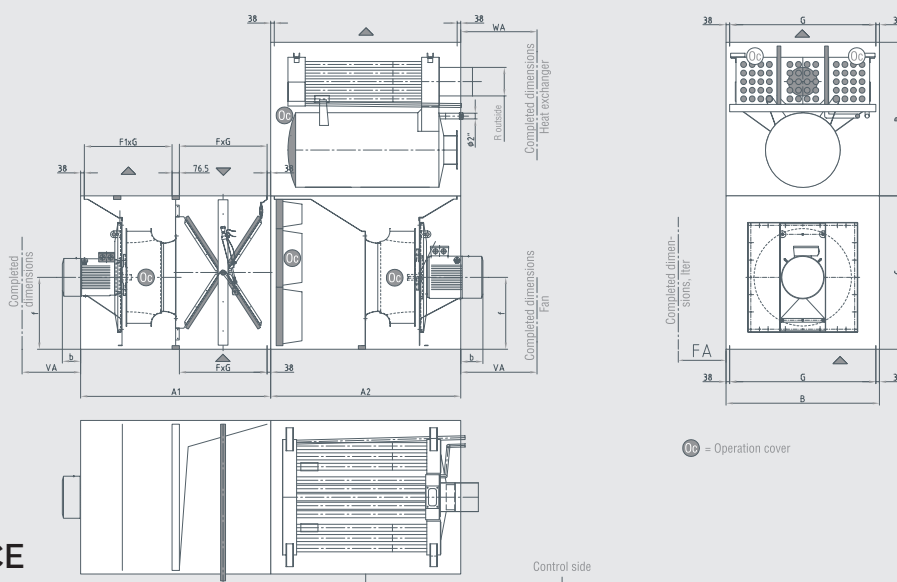
AT4 – PD COMPACT APPLIANCE

AL-KO "INDUSTRIE-ATEX"

The AL-KO air heater "INDUSTRIEATEX" is designed for application in storerooms, production facilities, assembly shops. This series is designed in accordance with the guidelines for explosion protection and is, therefore, predestined for application in the potentially explosive production environment. The components are suitable for gas in potentially explosive rooms in Zone 1 and 2. The air heaters "INDUSTRIE" in the ATEX design are tested by the TÜV Süd (Technical Inspection Authority, south) in accordance with the Explosion Protection Guideline 94/9/EU.

Air heating for application in potentially explosive atmospheres

Tehcnical data - Heating (heat exchanger, steel construction)				
Installation size:	LH 140-Atex H..	LH 250-Atex H..	LH 400-Atex H..	LH 650-Atex H..
max. air mass (m3/h)	2 070	3 720	5 590	8 800
thermal capacity (KW) (bei PWW 80 / 60 Le + 20 ˚C)	14.5	25.8	36.6	60.5
Drive (2-stage), posistor	3 x 400 V / 50 Hz Y / Δ			

Green solutions

Welcome to Renewable Energy World!
Use the energy of the sun...

... ideally with Energetica photovoltaic modules! Our official partner, Austrian technology company manufactures crystalline photovoltaic modules for national and international markets. We have already convinced many clients of our quality and service – and this number is growing steadily. Because Energetica is able to extract the most from the sun. For years. Guaranteed.

"We do not inherit the Earth from our Ancestors, we borrow it from our Children." At the same time, key words such as climate change, nuclear disasters, carbon dioxide emissions and oil spills question our ability to leave behind a planet that is worth living on. Therefore this is the right time to rely on environmentally-friendly power generated from the sun. Do your part! And rely on Energetica as your competent partner: advisory services and planning, production, installation and after-sales service – everything from one source.

Please find listed system main components:

- Photovoltaic modules
- Inverters
- Mounting structures

The heart of a high-quality photovoltaic system is a high class photovoltaic module.

René Battistutti laid the foundation for the photovoltaic company Energetica in 1995. His goal was clear even at that point of time: To use solar energy for generating electricity. Since then, groundbreaking developments have been made and innovations have been implemented. Today Energetica is considered as an Austrian innovator in photovoltaics.

As a general contractor, Energetica has over 15 years experience in planning and installation as well as in operations and maintenance of photovoltaic power plants. Therefore, Energetica is familiar with the requirements of a high-class photovoltaic module. This know-how is used in the development and manufacture of Energetica's photovoltaic modules.

The Austrian technology company Energetica produces photovoltaic modules, which are characterized˝by high performance and durability. The sun is so used as an optimal supplier of energy and high returns can be generated in the long term by using photovoltaic systems.

Ing. René Battistutti
Founder and CEO

energetica
PURE AUSTRIA. PURE ENERGY.

What makes Energetica modules so top-performing?

Maximum absorption of sunlight

Energetica photovoltaic modules can be recognized by the typical dark and uniform color of the antireflection coated solar cells - as a confirmation of the high quality and quality processing of the cell. The specially structured solar glass contributes to the fact that every ray of sunlight is used to the maximum by its excellent optical properties.

Optimal power management

Energetica modules have three bypass diodes to prevent the overheating of the solar cells (hot spots) in case of clouding. This intelligent interconnection of the cell strings improves the performance and the returns significantly.

Ideal thermal behavior

The unique combination of cells, backsheet and junction box guarantees maximum returns, even at high temperatures. Energetica exclusively uses high quality and certified junction boxes that are produced in Europe. The waterproof, non-flammable junction box includes a large heat sink. This leads to the ideal heat dissipation and improves so the power transfer.

Improved self-cleaning

The self-cleaning effect during natural precipitation is enhanced by the inclined aluminum frame. The wide frame features a flat transition to the glass. This prevents performance degradation due to dirt deposition on the edge of the frame.

High performance through intelligent engineering

MODEL: E-2000|235

Specifications rated at 1000 W/m² solar irradiance and 25° C temperature, spectral distribution AM 1,5

CE ▣ Safety class II IP54, all electrical datas and values ±10%

maximum power	open circuit voltage	short circuit current
235 WATTS	37,26 V	8,42 A

max power voltage	max power current	NOCT
30,12 V	7,88 A	48°C

max system voltage	module dimensions	power tolerance
1.050 Volts	1620 x 990 x 46 mm	

Serial number
00000001E

239,97 Wp

WARNING / ELECTRICAL HAZARD !!!

SOLAR MODULES PRODUCE DC ELECTRICITY WHEN EXPOSED TO SUNLIGHT. BEFORE INSTALLING, USING AND MAINTAINING THIS PRODUCT, READ AND FOLLOW ALL SAFETY INSTRUCTIONS OUTLINED IN THE INSTRUCTION MANUAL. MODULES WIRED IN SERIES INCREASES SHOCK HAZARD. FOR FIELD WIRING, COVER THE SOLAR MODULE WITH OPAQUE MATERIAL DURING CONNECTION. INSTALLATION AND OPERATION SHOULD BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND MANUFACTURER'S INSTALLATION MANUAL.

So that the investment in a photovoltaic system pays off, a photovoltaic module must utilize the sun's energy to the maximum.

After decades of installation experience we know: The sunlight, which is not used in the module to generate electricity, is wasted. Even by using the best other system components this loss cannot be restored.

Energetica photovoltaic modules are developed from practical experience and optimized for performance.

Additional power

In Energetica, great emphasis is placed on performance. Energetica modules are hence delivered only with positive power output tolerances. The performance categories are defined in 5-watt steps. The module category of 235 Wp is assigned to Energetica modules from 235 Wp to 239.99 Wp nominal power.

What makes Energetica modules so durable?
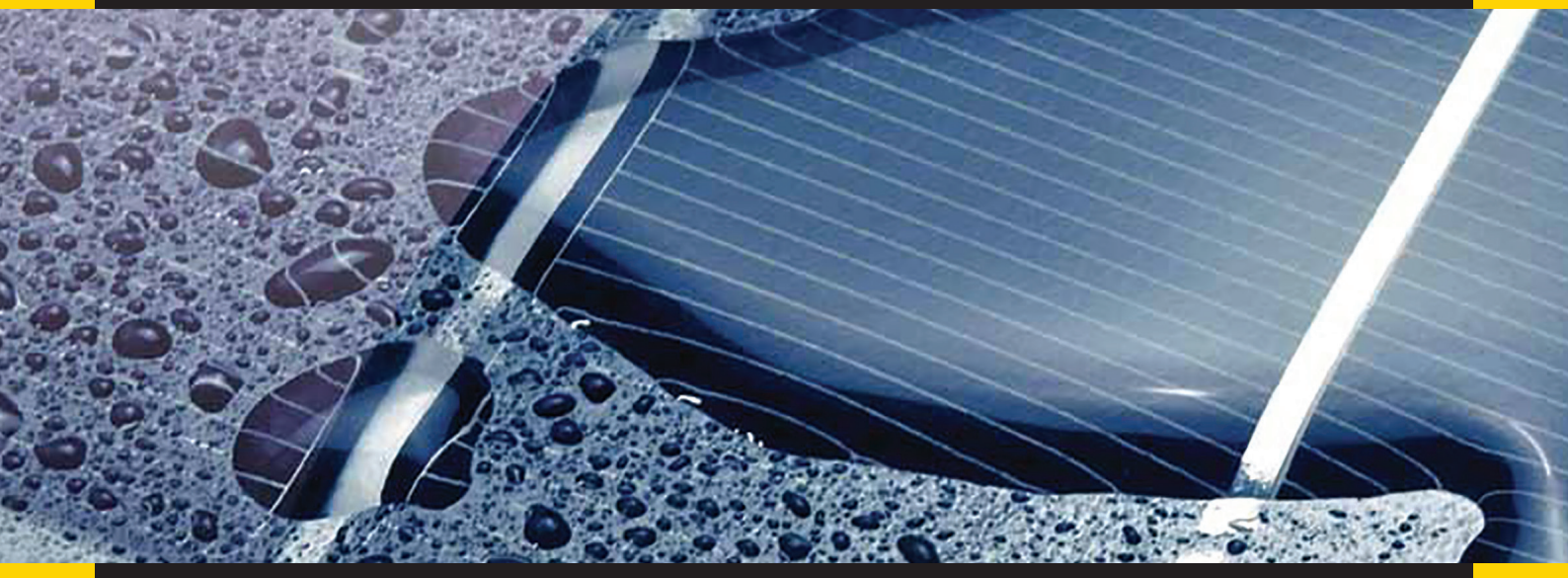
Mechanical stability

Energetica modules are certified for a force effect of more than 500 kg/m2. The sturdy double-walled aluminum frame is pressed with specially optimised corner angles. A high-quality sealant connects the frame with the laminate. This ensures maximum strength.

Consistent weather resistance

The double-walled aluminum frame is protected against corrosion by a layer of anodized coating with double thickness. The transparent EVA film encapsulates the solar cells, the solar glass and the backsheet to form a weatherproof laminate. The space between frame and glass edge is sealed by a UV, temperature and weather-resistant sealant. By completely plugging the junction box, a 100% moisture proofing is achieved even here.

Maximum frost resistance

Condensation on the back of the frame is prevented by drainage holes in the hollow profile. This avoids frost damage to the frame at sub-zero temperatures, which may be caused by repeated freezing and thawing during temperature fluctuations.

More safety

Maximum encapsulation means more safety and minimum aging for the photovoltaic module. The high-quality backsheet is designed for a system voltage up to 1050 volts. The film-glass composite of the Energetica modules withstands 3.5 times the temperature cycle test than that specified in the standard IEC 61215: 2005 ed. 2.0. Loading capacity is very important for Energetica.

Long lifetime through sophisticated design

4 mm thick, highly transparent structured solar glass

UV, temperature and weather resistant sealant

Transparent EVA films encapsulate solar cells on both sides

Double-walled aluminum frame, anodized with double thickness

Solar cells of high crystalline quality with antireflection coating

High-quality backsheet for system voltages up to 1.050 volts

cross-section diagram of an˝Energetica photovoltaic modle

To reliably generate returns over the decades of lifetime of photovoltaic modules, it is necessary that the nature of the module is robust. Only then it can withstand the constant environmental influences and provide the desired long-term performance. Energetica modules are tested in practice and designed for long-term performance.

What makes Energetica quality so distinctive?

Materials of highest quality

Energetica relies on established manufacturers while selecting suppliers and procuring materials. Expertise is implemented to continuous improvements in close dialogue and technical developments are realised together. Stability, safety and performance are important in this process.

Added benefit through service

Energetica focuses strongly on the added benefit for the customer. Thus, for example, Energetica modules are presorted on pallets based on performance range. This particular type of delivery saves preparation time at the installation site because the assembly of presorted modules leads to optimized energy yields.

Quality controlled manufacturing process

Each manufacturing stage has one or several quality assurance steps. Production staff and a number of electronic tests carry out specific quality checks by testing, visual inspections, backlight checks and measurements. So the fulfillment of all the specifications is guaranteed.

Environmentally friendly production

Energetica photovoltaic modules are produced with 100% clean energy. The power supply for the production comes from electricity that is exclusively produced from renewable resources. All the packaging material used is fully recyclable. In this way Energetica contributes every day to a positive ecological balance.

What makes Energetica quality so distinctive?
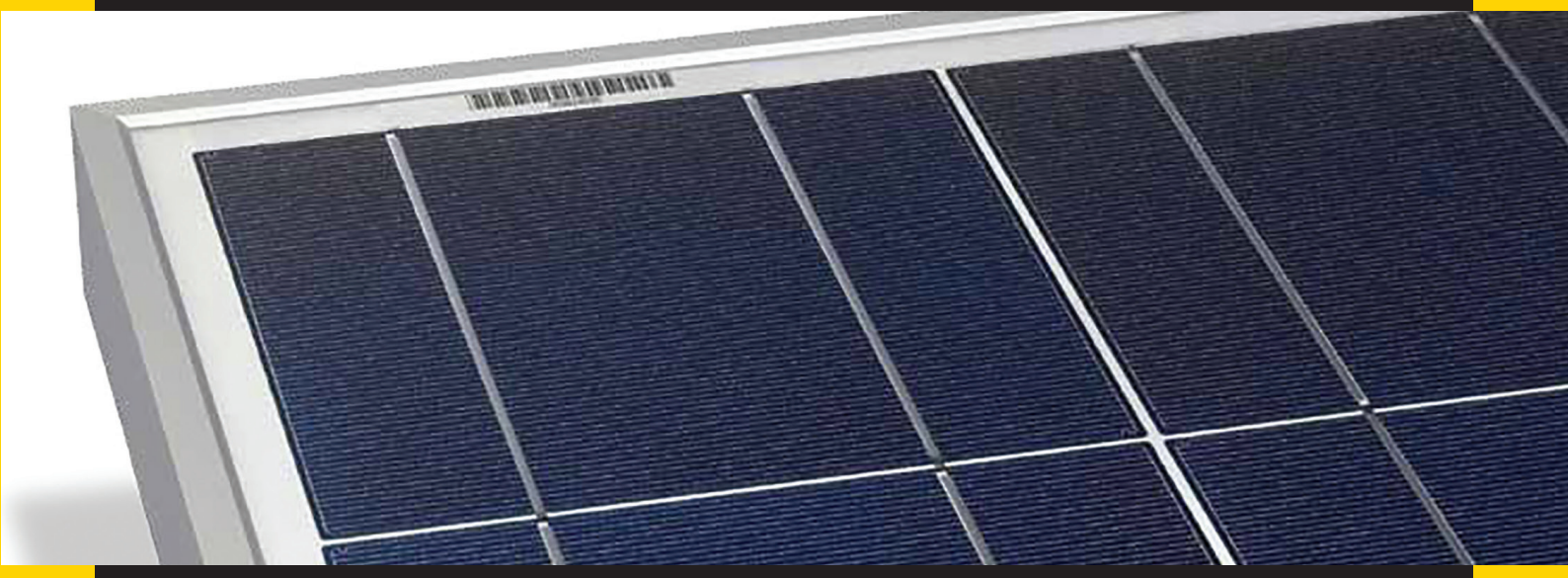
Maximum satisfaction thanks to premium quality

To ensure maximum investment protection, the use of high quality raw materials and precise manufacturing processes are required. As a solar power pioneer, Energetica has always been committed to a high quality standard. So the service at all value added steps takes place with consistent quality controls at highest standards.

High quality is visible by comparison!

Homogeneous dark blue cell coloring, robust frame and precise fit of the frame corners, aesthetic cover of the string connections, all in all an appealing symmetrical design.

The extensive experience gained from the implementation of photovoltaic systems is used every day in the design and production of Energetica modules. The detailed knowledge gained during module production in turn provides a valuable basis for our engineers to plan and implement photovoltaic systems.

Energetica photovoltaic modules always go through quality assured productions steps:

1

Tabber-stringer with automatic layup

The solar glass is cleaned and prepared with the first layer of EVA film for the layup. Tabber and stringer connect the solar cells into strings (cell chains) with high precision. The robot takes the string to position it on the prepared solar glass after visual inspection.

2

Cross soldering

After the intermediate check, the strings are cross-wired into a cell matrix and the connecting contacts are fitted. The last step of this production stage is a final inspection of the connected cells and strings.

Pure exellence. Pure energy.

Energetica's productions maxims.

3

Lamination

After the wiring is completed, all the layers are placed one over the other for lamination and are fused by heat and pressure. So the EVA films together with the structured solar glass, the backsheet and the encapsulated cells form a tightly sealed and weatherproof laminate. After this process step, all the laminates are visually inspected, electrically tested and released for further processing.

4

Framing

The solid laminate layer is now provided with a double-walled aluminum frame in order to ensure safe installation and maximum stability. The laminate edge is sealed and bonded, creating an additional link to the frame and sealing against the effects of weather. The strength of the frame and the leak-proof sealing are ensured through quality inspections.

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5

Electrical contact and final inspection

In the next manufacturing step, the junction box with a heat sink (for optimal heat dissipation) is mounted at the back of the module. A functional test is carried out again at this point. Cables and connectors are fitted to the junction box. This allows quick and safe installation during the future assembly of several modules. Each Energetica module is again checked cell by cell and finally cleaned.

6

Flashing and performance documentation

Using solar simulation, the actual performance of each module is determined under standard conditions. The module label holds, amongst other things, the serial number, performance category and actual performance data of the module. The junction box is sealed with a sealing compound, which protects the electronics from moisture.

The finished Energetica modules are now sorted, stacked and placed on pallets for delivery. All the packaging materials are fully recyclable. The tabulated performance data of the modules with their serial numbers are part of each delivery as flash list of the module performance documentation.

Energetica photovoltaic modules

Intelligent engineering and sophisticated design ensure:

High Performance
Long Durability
Premium Quality
Additional Power
Extensive warranty services

Energetica solar modules are certified according to the applicable European and international requirements of IEC 61215:2005 ed. 2.0 and meet the requirements of protection class II. Energetica is a cooperation partner of OVE.

For technical data of Energetica photovoltaic modules please refer to product data sheets, which are available online at www.energetica-pv.com.

Notes

Zome-EX
engineering

Zone-Ex
engineering

Explosion proof products / HVAC / Green Solutions / Turnkey Solutions