

EFAFLEX 
safe high-speed doors

EX Series



*High-speed door systems for
potentially explosive atmospheres*



Explosion protection in general

The ATEX Product Directive 2014/34/EU sets out the intended use of equipment and protective systems in potentially explosive atmospheres.

The ATEX Workplace Directive 1999/92/EC sets out the minimum requirements for improving the health and safety protection of workers potentially at risk from explosive atmospheres. According to this Directive, the operator of systems in potentially explosive atmospheres must draw up an explosion protection document within the scope of their risk assessment and classify potentially explosive atmospheres into explosion protection zones.

Our EX Series door systems can be used in the following explosion protection zones:

Gas/	Zone 1 (II 2G Ex IIB T4 Gb)	Dusts*	Zone 21 (II 2D IIIB 135°C X Db)
Vapours	Zone 2 (II 3G Ex IIB T4 Gc)		Zone 22 (II 3D IIIB 135°C X Dc)

Certification:
TÜV 20 ATEX 191287 X

X = special conditions of use
* optional on request

The control box must be installed outside the potentially explosive atmosphere.

The EX Series high-speed doors are specially designed for use in potentially explosive atmospheres according to ATEX Directive 2014/34/EU. All electrical equipment is included in a list of equipment, stating the explosion protection properties and the IEC certificate, which is handed over to the customer together with the door documentation. Mechanical explosion protection is implemented according to the requirements of the explosion protection zone.





EX command encoder:

- Push-button
- Induction loops
- Key switch
- Pull switch
- Reflective light barrier

Potentially explosive atmospheres

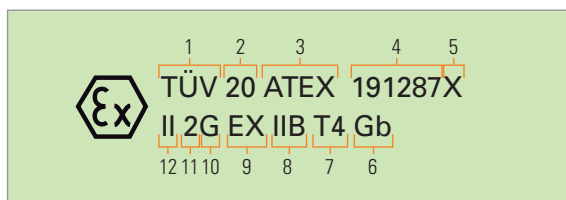
Conditions and classification of zones			Required marking of the devices			
Flammable substances	Temporary behaviour of the explosive atmosphere	Classification of potentially explosive atmospheres	Group as defined in the Directive 2014/34/EU	Equipment category within the meaning of Directive 2014/34/EU	Equipment group within the meaning of EN IEC 60079-0	Equipment protection level (EPL) within the meaning of EN IEC 60079-0
Gases and vapours	Occur occasionally during normal operation	Zone 1	II	2G or 1G	II	Gb or Ga
	Usually occurs in normal operation, or only for a short time	Zone 2	II	3G or 2G or 1G	II	Gc or Gb or Ga
Dusts	Occur occasionally during normal operation in the form of a cloud	Zone 21	II	2D or 1D	III	Db or Da
	Do usually not occur in the form of a cloud during normal operation or occur only for short periods	Zone 22	II	3D or 2D or 1D	III	Dc or Db or Da

EX marking according to 2014/34/EU (ATEX)

Classification of potentially explosive atmospheres substances	Flammable	Conformity statement number according to 2014/34/EU	Group within the meaning of Directive 2014/34/EU
Zone 1	Gases/vapours	 TÜV 20 ATEX 191287 X	II
Zone 2	Gases/vapours	 TÜV 20 ATEX 191287 X	II
Zone 21*	Dusts	 TÜV 20 ATEX 191287 X	II
Zone 22*	Dusts	 TÜV 20 ATEX 191287 X	II

* optional on request; X = special conditions of use for the door system

Conformity statement number according to 2014/34/EU of TÜV NORD CERT GmbH



(Sample figure on the type plate of the door system for zone 1)

- 1 Notifying body
- 2 Year of examination
- 3 Test standard ISO 80079-36:2016
- 4 IECEx test report number
- 5 Special conditions of use for the door system
- 6 Equipment protection level (EPL) within the meaning of EN 60079-0
- 7 Temperature class T4 (> 135 °C ... ≤ 200 °C)
- 8 Explosion group
- 9 Marking for electrical equipment: corresponds to one or more types of protection
- 10 Type of potentially explosive atmosphere: Mixture of air and gases, vapours and fog
- 11 Equipment category within the meaning of Directive 2014/34/EU
- 12 Equipment group

Division of gases and vapours

Gases and vapours		Assignment of the gases and vapours according to ignition temperature	Temperature class	Maximum surface temperature (equipment)	Permissible temperature classes (equipment)
Ammonia, methane, ethane, propane	Urban gas, acrylonitrile	> 450 °C	T1	450 °C	T1 to T6
n-butane	Ethylene, ethylene oxide, ethyl alcohol	> 300 °C ... ≤ 450 °C	T2	300 °C	T2 to T6
Petrol in general, jet fuel, n-hexane, cyclohexane	Hydrogen sulphide	> 200 °C ... ≤ 300 °C	T3	200 °C	T3 to T6
Acetaldehyde	Ethyl ether	> 135 °C ... ≤ 200 °C	T4	135 °C	T4 to T6

Groups

IIA	IIB
Permissible equipment groups	
IIA, IIB, IIC	IIB, IIC

Equipment category within the meaning of Directive 2014/34/EU	Marking for electrical equipment	Permissible equipment groups	Permissible temperature classes (equipment)	Equipment protection level (EPL) within the meaning of EN IEC 60079-0	
2G	EX	IIB	T4	Gb	
3G	EX	IIB	T4	Gc	
2D	–	IIIB	T135 °C	X	Db
3D	–	IIIB	T135 °C	X	Dc

Division of dusts

Permissible equipment groups	Groups	Dusts
IIIA, IIIB, IIIC	IIIA	combustible lint
IIIB, IIIC	IIIB	non-conductive

Max. permissible surface temperature of the equipment

Temperature limit for dust layers $T_{5\text{mm}}$: Minimum ignition temperature of the dust layer	$T_{\text{max}} \leq T_{5\text{mm}} - 75 \text{ °C}$
Temperature limit for dust layers T_{CL} : Minimum ignition temperature of the dust cloud	$T_{\text{max}} \leq 2/3 T_{\text{CL}}$
Maximum permissible surface temperature of the equipment:	the lowest of the two T_{max} values

EFA-SST® EX



High-speed spiral door for EX applications

The advantages of EFA-SST® EX at a glance:

- Can be used in EX protection zones 1, 2, 21* and 22*
- Wind resistance class 2 to 4
(depending on the width of the door system)
- Up to 200,000 load cycles per year
- Suitable for external and internal applications
- Speed: opening 1.0 m/s; closing 0.5 m/s
- Standard sizes up to W=4,000 mm x H=5,000 mm
- Application temperature: - 15 °C to + 50 °C

For use in explosion protection zones

The high-speed spiral door EFA-SST® EX has been developed in accordance with the ATEX Directive 2014/34/EU specifically for use in potentially explosive atmospheres:

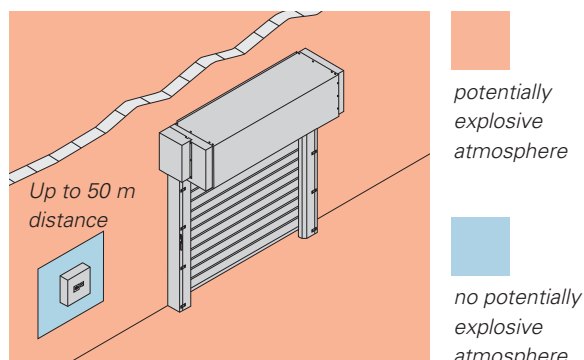
Gases/vapours: Zone 1 (II 2G Ex IIB T4 Gb)
Zone 2 (II 3G Ex IIB T4 Gc)

Certification: TÜV 20 ATEX 191287 X

Dusts*: Zone 21 (II 2D IIIB 135°C X Db)
Zone 22 (II 3D IIIB 135°C X Dc)

X = special conditions of use

* optional on request



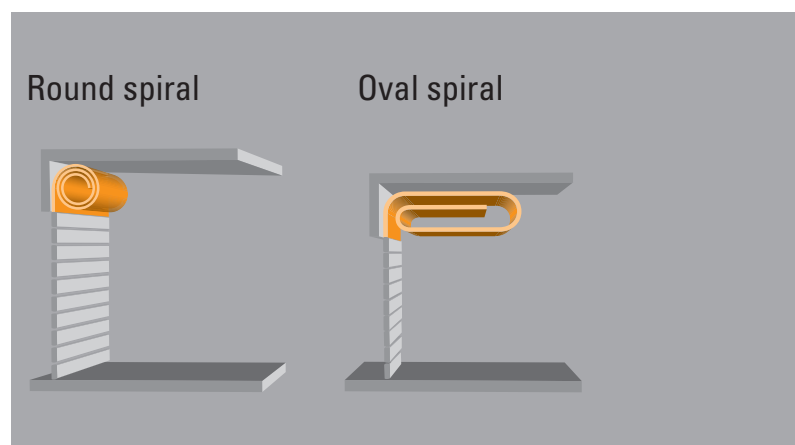
The control box must be mounted at an ambient temperature of + 5 °C to + 50 °C and outside the potentially explosive atmospheres

The typical hall door for use in potentially explosive atmospheres

The EFA-SST® EX is excellently suited for both indoor and outdoor use. With its fixed door leaf, it enables a high opening and closing speed and is distinguished by high wind resistance and optimal sealing. EFAFLEX offers high-speed spiral doors from the EX Series in two versions: The standard version with circular round spiral and the oval spiral variant which we recommend for confined spaces.

The smooth door leaf consists of double-walled, anodised aluminium laths with large material thickness in the best quality for the 151-mm division version; for the 225-mm division version it consists of single-walled aluminium laths. Depending on the desired incidence of light, we can integrate any number of EFA-CLEAR® sight laths made of acrylic glass (optionally "break-proof" polycarbonate). As a further variant of the door leaf design, ventilation laths can be used to ensure defined air exchange. The individual colour design of the door leaf can be realised in almost any RAL colour according to individual requirements.

The advantage of EFAFLEX high-speed spiral doors: The door leaf is not wound on a shaft but kept at a distance in the EFAFLEX spiral to save space. The laths are screwed to large hinge straps on both sides. The laths are guided by particularly easy and quiet-running rollers. Thus neither drive nor transmission forces act within the door leaf. This door construction permits an almost wear-free operation at the highest demands.



Application

- Industrial applications e.g. chemicals, hazardous substances, painting systems and pharmaceuticals
- Suitable for external and internal applications
- Outdoor installation possible under an on-site canopy

EFA-SRT® EX



High-speed roll-up door for EX applications

The advantages of EFA-SRT® EX at a glance:

- Can be used in EX protection zones 1, 2, 21* and 22*
- Up to 150,000 load cycles per year
- Heavy-duty internal door
- Speed: opening 1.0 m/s; closing 0.5 m/s
- Standard sizes up to W=4,000 mm x H=4,000 mm
- Application temperatures: + 5 °C to + 50 °C

For use in explosion protection zones

The high-speed roll-up door EFA-SRT® EX has been developed in accordance with the ATEX Directive 2014/34/EU specifically for use in potentially explosive atmospheres:

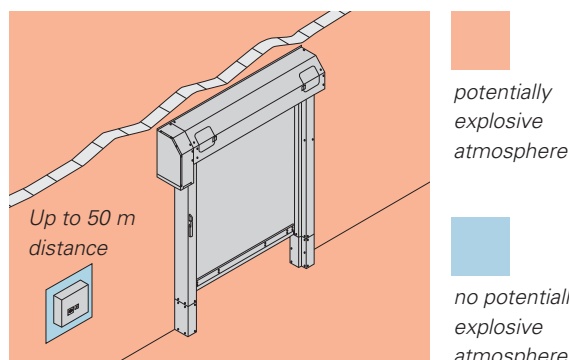
Gases/vapours: Zone 1 (II 2G Ex IIB T4 Gb)
Zone 2 (II 3G Ex IIB T4 Gc)

Certification: TÜV 20 ATEX 191287 X

Dusts*: Zone 21 (II 2D IIIB 135°C X Db)
Zone 22 (II 3D IIIB 135°C X Dc)

X = special conditions of use

* optional on request

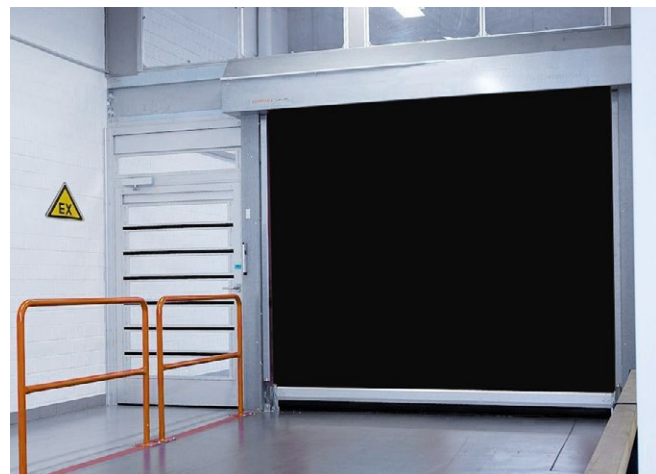


The control box must be mounted at an ambient temperature of + 5 °C to + 50 °C and outside the potentially explosive atmospheres.

The internal door for use in potentially explosive atmospheres

In addition to a standard frequency converter and a microprocessor control, the EFA-SRT® EX contains all proven features of the latest door technology. Permanent door leaf tensioning and a standard weight counterbalance are realised by a tension spring mechanism. The motor brake can be released manually by the standard release lever. So the tension spring mechanism alone enables partial opening of the door system. The whole system also works without power supply and is fast and easy to use as it does, for example, not require any emergency hand crank.

A robust guide on the sides of the door leaf prevents undesirable air exchange in the event of wind, draught and air pressure drops. The black, antistatic special curtain of the high-speed roll-up door satisfies the high explosion protection requirements and is also transversely stable, which prevents the door leaf from bulging inwards or outwards. The cases are made of sendzimir-galvanised steel are also available powder coated according to RAL or in stainless steel on request.



Application

- Industrial applications e.g. chemicals, hazardous substances, painting systems and pharmaceuticals
- Suitable for internal applications

Accessories

Optional safety equipment

- Additional emergency operation lever
- Locking lever (for EFA-SST® EX)
- Approach area protection: Induction loop
- Additional reflection light barrier
- Emergency stop control
- Limit switch
- Complete covering as finger protection



EX key switch open-close
EX emergency stop control
(photo: R-Stahl)



EX push button
open-close
(photo: R-Stahl)



EFA-CLEAR® sight laths

Optional command encoders

- Push button (different versions)
- Pull switch
- Induction loop
- Key switch
- Reflective light barrier

Optional door equipment

- Control box heating
- Control box, lockable
- Frame extension
- Powder coating:
 - Door frames
 - Door leaf (for EFA-SST® EX)
- Stainless steel version (door frames)
- EFA-CLEAR® sight laths (for EFA-SST® EX)
- EFA-VENT ventilation laths



Emergency operation lever

Technical data:

		EX Series	
		EFA-SST® EX	EFA-SRT® EX
		L	L
Application	Inside door	●	●
	Closing door	●	–
Wind load, max.*	According to DIN EN 12424 in classes	2-4	npd**
Operating forces / secure opening	According to DIN EN 13241	Fulfilled	Fulfilled
Resistance against penetrating water*	According to DIN EN 13241 in classes	0	npd
Air permeability*	According to DIN EN 13241 in classes	2	npd
Direct airborne sound insulation R_{w}^* (20 mm door leaf, 151 mm division)	in dB according to DIN EN 717-1	23	12
Direct airborne sound insulation R_{w}^* (30 mm door leaf, 225 mm division)	in dB according to DIN EN 717-1	20	12
U-value maximum* (20 mm door leaf, 151 mm division)	in W/m ² K according to DIN EN 2428	5.8	npd
U-value maximum* (30 mm door leaf, 225 mm division)	in W/m ² K according to DIN EN 2428	6.5	npd
Door size (in mm) (special sizes on request)	Width W max.	4,000	4,000
	Height H max.	5,000	4,000
Maximum door leaf speed	Opening in m/s	1.0	1.0
	Closing in m/s	0.5	0.5
Door leaf guide	Round spiral	●	–
	Oval spiral (only with 151 mm division)	○	–
Steel design	Steel-sheet frame,	●	●
	Galvanised stainless steel	○	○
	Powder coated according to RAL	○	○
Door leaf	● ATEX curtain, black, without viewing window	–	●
	● Double-walled aluminium lath (lath division 151 mm)	●	–
	- Anodised	●	–
	- Powder coating (RAL)	○	–
	- EFA-CLEAR® sight lath (acrylic glass)	○	–
	- EFA-CLEAR® sight lath (polycarbonate)	○	–
	- Ventilation lath	○	–
	● Single-walled glazing with aluminium outer bars (lath division 225 mm)	●	–
	- Anodised	●	–
	- Powder coating (RAL)	○	–
	- EFA-CLEAR® sight lath (acrylic glass)	●	–
	- EFA-CLEAR® sight lath (polycarbonate)	○	–
	- Ventilation lath	○	–
Fire behaviour	DIN 4102 material class	B2	B2
Weight counterbalance by		Spring	Spring
Designed for approx. ... load cycles p.a.		200,000	150,000
Drive	Electric motor with frequency converter	●	●
Control	EFA-TRONIC® Professional	●	●
	Frequency converter	●	●
	Main switch with membrane keyboard	●	●
Lead	Power supply connection 230 V/50-60 Hz	●	●
	Circuit breaker	16 A (K)	16 A (K)
Emergency operation		●	●
Safety devices	Safety edge	●	●
	Reflective light barrier	●	●

● Standard, ○ on request, – not deliverable, *dependent on door leaf, door leaf housing and door size, subject to technical changes, npd = no performance determined

** Measurement by EFAFLEX: Wind load resistance: 43 km/h / 90 Pa

EFAFLEX
Tor- und Sicherheitssysteme
GmbH & Co. KG
Fliederstraße 14
DE-84079 Bruckberg/Germany
Telephone +49 8765 82-0
www.efaflex.com
info@efaflex.com



Technological advancement. Pioneering design.

EFAFLEX® is a registered and legally protected trademark.

Subject to technical changes. Some diagrams depict special features.

Overall design:

www.creativconcept.de 10122

For more than 40 years, EFAFLEX has developed and designed reliable and highly-efficient high-speed doors. With innovative technology and pioneering solutions for special requests, EFAFLEX continually provides the market with new stimuli. This leadership role through superior technology, the best quality and a maximum degree of security is part of EFAFLEX's identity. More than 1,200 employees guarantee competent consultation and excellent service. Worldwide and always near you.

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