

# 12 Appendix

## 12.1 Check list and inquiry form for explosion-proof drives

The following check list will help you to determine the necessary information for specifying the unit properties and unit categories of drives that are used in potentially explosive atmospheres.

### 12.1.1 Check list for explosion-proof drives

Step	Criterion	Condition	Decision	Con- tinue with step			
1	Potentially explosive mixture of air and	Gas		2			
'	1 oteritally explosive mixture of all and	Dust		7			
For gas							
2	Drive will be installed in	Zone 1		3			
-	2.110 Will be inclained in	Zone 2		5			
3	In the case of zone 1, the protection type of the motor is pre-	Flameproof enclosure (d)		4			
	scribed by the customer as	Increased safety (e)		5			
4	In the case of motors with flameproof enclosure, design of the	TB with flameproof enclosure (d)		5			
_	terminal box (TB)	TB with increased safety (e)					
		IIA					
5	Group specification	IIB		6			
		IIC					
		Т3					
6	Town and we also (for marking with war)	T4	9				
	Temperature class (for gas/air mixtures)	T5 (only with flameproof enclosure)					
		T6 (only with flameproof enclosure)					
For dust							
		Zone 21					
7	Drive will be installed in	Zone 22 (flammable lint)		9			
,	Drive will be iristalled iri	Zone 22 (non-conducting dust)	8				
Ī		Zone 22 (conducting dust)					
		T120 °C	°C				
8	Maximum permitted surface temperature (for dust/air mix-	T140 °C		9			
0	tures)	T150 °C (only for synchronous servo gearmotors)					
Compan	y address						
	Ms. / Mr.						
9	Company						
	Department	Place, date					

### **Appendix**



Check list and inquiry form for explosion-proof drives

#### Notes on the individual items:

#### Step 1

Categorization of the potentially explosive atmosphere into gas or dust.

#### Step 2

Zone categorization according to the installation location of the drive. The owner is responsible for the zone categorization according to directive 99/92/EC. Assistance can be obtained from the TÜV (German Technical Control Board), German Institutions for Statutory Accident Insurance and Prevention or expert offices:

- Zone 1: Potentially explosive gas mixtures are to be expected in normal operation.
- Zone 2: Potentially explosive gas mixtures are not to be expected in normal operation and if they occur at all, then only briefly.

#### Step 3

Protection types of the motor for use in zone 1.

· Flameproof enclosure (d)

Potentially explosive mixtures can penetrate the equipment, the mixture inside the housing can be ignited  $\rightarrow$  Design measures prevent ignition of the external atmosphere

Increased safety (e)

Potentially explosive mixtures can penetrate the equipment, no sources of combustion in or on the equipment  $\rightarrow$  No ignition of the gas mixture.

#### Step 4

Design of the terminal box in the case of motors with flameproof enclosure with protection type

· Flameproof enclosure (d)

When this terminal box version is selected, it is essential to take account of the permitted cable bushings (conduit system, cable glands, etc.). In addition, the thread type of the screw fitting (ISO or NPT) must be specified.

Increased safety (e)

When this terminal box version is selected, the cable entry design can be simpler. It is merely necessary to use an Ex-certified screw fitting.

#### Step 5

Group II is divided into 3 subgroups according to substance.

All protection types

Electrostatic requirements for plastic surfaces (including paint). As a consequence, the EX designation of protection types "e" and "nA" (previously II) is changed to IIA, IIB or IIC, depending on the plastic surfaces or paint used.

Additionally for flameproof enclosure (d)

Here, the subgroup determines the parameters of the ignition gap.

Refer to the relevant published tables, e.g. Nabert/Schön, "Kennzahlen brennbarer Gase und Dämpfe" ("Classifications of flammable gases and vapors"), Deutscher Eichverlag GmbH, D-38102 Braunschweig, Germany.





#### Step 6

Each of the temperature classes represents the assured maximum surface temperatures of the drive. For information about the temperature classes of the hazardous materials, refer to step 5:

T3: Max. permitted surface temperature: 200 °C
T4: Max. permitted surface temperature: 135 °C
T5: Max. permitted surface temperature: 100 °C
T6: Max. permitted surface temperature: 85 °C

#### Step 7

Zone categorization according to location where the drive is used. According to Directive 99/92/EC, the owner is responsible for the zone categorization. Assistance can be obtained from the TÜV (German Technical Control Board), German Institutions for Statutory Accident Insurance and Prevention or expert offices:

- Zone 21: Potentially explosive dust/air mixtures are to be expected in normal operation.
- Zone 22: Potentially explosive dust/air mixtures are not to be expected in normal operation and if they occur at all, then only briefly.

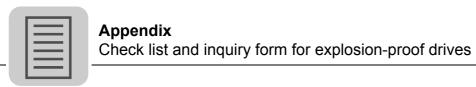
Group III is divided into 3 subgroups according to substance.

Group	Suitable for atmospheres with	Minimum degree of protection IP
IIIA	Inflammable fluffing	5x
IIIB	Non-conducting dust	5x
IIIC	Conducting dust	6x

#### Step 8

The maximum surface temperature of a drive in dust/air mixtures. The value is specified in °C. The maximum surface temperature of synchronous servo gearmotors is 150 °C.

For information about this, refer for example to: BIA-Report "Brenn- und Explosionskenngrößen von Stäuben" (Report no. 3051 of BG Institute for Occupational Safety, "Combustion and explosion characteristics of dusts"), Hauptverband der gewerbl. Berufsgenossenschaften, D-53757 St. Augustin, Germany



## 12.1.2 Inquiry form for explosion-proof drives

Customer data													
Company:						Cus	stome	no.:					
Department													
Name		Tel	Tel.:										
Street / P.O. Box:						Fax	C:						
Zip code/city:						Em	ail:						
Your contact person	on at S	EW-EU	JRODE	RIVE									
Name:		Tel											
Technical office:						Fax	C:						
Technical data													
Quantity:						Des	sired d	elivery	date:				
Catalog designation	:												
Gear unit type				-14  1:1				-l:l			ar SPIROPLAN®		
☐ Helical gear unit		_		shaft helical	☐ Helical-bevel		unit	elical-w	orm ge	ar	☐ 25FI	ROPLAN	
		gear	um		gear unit		unit						
☐ Multi-stage gear	unit												
Power:	k\	N		Output spee	d: rpm			Outpu	ıt torqu	ie:	Nr	n	
Cycles/hour:	c/h	•		Сифисорос	<u></u> .р			- u.ipu					
1-shift operation				2-shift ope	eration			□ 3-s	hift ope	eratio	n		
Regular				☐ Irregular					ry irregi				
Mounting position					Housing type				, .				
M1 M2 M3	M4	M5	M6	Pivoted	☐ Foot-		Flang	e (bore)			Flange (t	hread)	
					mounted								
					☐ Torque arm			(	Other:				
Shaft type													
Solid shaft with k				Shrink dis	k				hollow	shaft	Ø	mm	
☐ Hollow shaft with				☐ TorqLoc <sup>®</sup>				Flange			mm		
Shaft position (for	angulaı	r gear	Tei	rminal box pos	sition				Cal	ole e	ntry		
units)				00 (D)	000 (D)	2 (1 )		( <del>-</del> -		v   [			
□ A □ B		AB		0° (R)	90° (B)	(L)	2	270° (T)	)   🗆 :	Χ   [	<u> </u> 1   L	] 2   [] 3	
Dogram of protective	nn			Thormal class	Se 91	ırfaca	lcorro	cion n	otootic	'n			
Degree of protection			D65	Thermal clas				sion pr	_		□ 083	□ 084	
	on IP55	☐ IF	P65	Thermal clas	SS SI SI	u <b>rface</b> ] KS			otectic OS2		OS3	☐ OS4	
☐ IP54 ☐			P65						_		□ os3	OS4	
☐ IP54 ☐ ☐ Line voltage:	IP55	V		☐ 130 (B)	☐ 155 (F) ☐	] KS			_		OS3	OS4	
☐ IP54 ☐ ☐ Line voltage:		V	P65 60 Hz		155 (F)				_		OS3	OS4	
Line voltage:	1P55 50 Hz	V		130 (B)	155 (F)	] KS		OS1   [	_		OS3	OS4	
Line voltage: Line prequency:	1P55 50 Hz	V		Connection type:	155 (F)	] KS □ Y		OS1   [	OS2		OS3	OS4	
Line voltage: Line prequency:	1P55 50 Hz	V		Connection type: Max. frequentrypica	□ 155 (F) □ Cy: Hz  al application che (ypical application	] KS □ Y		OS1   [	OS2	je:	OS3	OS4	
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