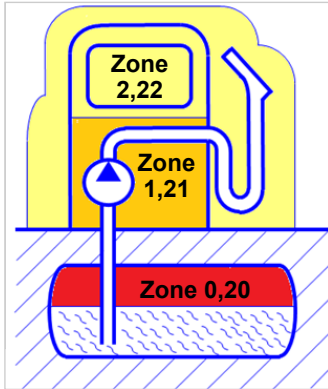


OVERVIEW OF EXPLOSION PROTECTION CLASSES

EX zones and designations according to IEC, EN, DIN, NEC

We offer different types of encoders/counters for explosion-proof areas. Here you will find Explanations to the most important designations. You can find detailed data sheets for our products on the homepage.

EX area - Zones



GAS Temperature classes

T1	450°C max. permissible surface temperature
T2	300°C max. permissible surface temperature
T3	200°C max. permissible surface temperature
T4	135°C max. permissible surface temperature "suitable for most gases except carbon disulfide, for example."
T5	100°C max. permissible surface temperature
T6	85°C max. permissible surface temperature "suitable for all gases"

For example, if a product has the T4 class, it covers all products above it (T1-T3).

GAS Group

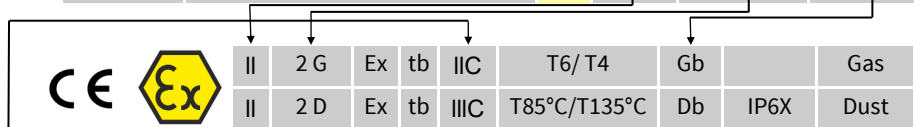
I	Methane (Mining)
IIA	Ignition energy min 260 µJ
IIB	Ignition energy min 95 µJ
IIC	Ignition energy min 18µJ (e.g. hydrogen, covers all other groups) "suitable for all gas groups"

DUST Group

IIIA	Flammable lint
IIIB	Non-conductive dust
IIIC	Conductive dust "suitable for all dust"

Classification and marking EX areas according IEC, EN, DIN, NEC505

ATEX Ex	Combus- tible materials	Conduct flammable substances (in medium)	Ex Zones	Marking of the Resources		Equip- ment pro- tection level (EPL)
				Device group	Equipment category	
IEC	Mining	May not be used in the event of firedamp can continue to be operated.		I	M1	Ma
		Must be switched off if firedamp occurs		I	M2*	Mb
ETL Intertek SP US UL LISTED CCC	Gases Fog Fumes	Is permanently, long-term or frequently present	0	II	1G	Ga
		Occasionally occurs	1*	II	1G/2G	Ga/Gb
		Probably does not occur, and if it does, then only rarely or briefly	2*	II	1G/2G/3G	Ga/Gb/Gc
UL LISTED CCC	Dust	Is constant, long term	20	II	1D	Da
		Occasionally occurs	21*	II	1D/2D	Da/Db
		Probably does not occur due to whirled-up dust or rarely/briefly	22*	II	1D/2D/3D	Da/Db/Dc



Protective principle	Type of protection	(Symbol) Identification	Use in zone
Transmission of flames to the outside excluded	Flameproof enclosure	da, db*, dc	0,1,2, 1,2*, 2
Avoidance of sparks and too high temperatures	Increased safety	eb, ec	1,2, 2
Energy limitation of the circuits, of sparks and temperatures	Intrinsic safety	ia, ib*, ic	0,1,2, 1,2*, 2
EX - atmosphere is kept away from the ignition source	Pressurization	pxb, pyb, pzc	1,2, 1,2, 2,22
EX - atmosphere is kept away from the ignition source	Encapsulation	ma, mb, mc	0,1,2, 1,2, 2
Risk analysis	Non-electrical equipment	ha, hb*, hc	0,1,2, 1,2*, 2
Dust explosion protection	Protection by Housing	IP6X	20,21,22, 21,22*, 22

*Characteristics in bold correspond to Hengstler products

If a product is suitable for zone 1 or 21, it can also be used in zones 2 or 22

(as is also the case outside the Ex zones)

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OVERVIEW OF EXPLOSION PROTECTION CLASSES

EX zones and designations according to IEC, EN, DIN, NEC

We offer various encoders and counters for use in hazardous areas. Here you will find an overview of the most important products. Detailed data sheets are available on our homepage.

Approvals:

International



EU



USA
CAN



AX70/71
RX70/71



AX65



AX73



EN42



EN44



ISD25



ISD37
ISW38



HD20



HD25



490



495
497



499



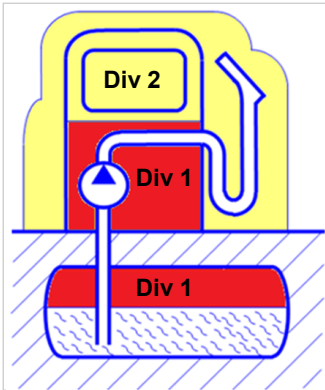
Type	Interface Function	Protection principle	Gas-Group/Temp Dust Group/Temp Mining	Category	For Zone	Approvals
Absolute Encoder						
AX70/71	CANOpen, SSI, Profibus		IIC T4/T6 IIIC T135/85°C	Gb Db	1,2 21,22	
AX65	CANOpen		I IIC T4 IIIC T135°C	Mb Gb Db	M2 1,2 21,22	
AX73	CANOpen, SSI, Profibus		IIC T4/T6 IIIC T135/85°C	Gb Db	1,2 21,22	
Incremental Encoder						
RX70/71	Incremental		IIC T4/T6 IIIC T135/85°C	Gb Db	1,2 21,22	
EN42	Incremental		IIC T4 IIIC T119°C	Gb Db	1,2 21,22	
EN44	Incremental		IIC T4 IIIC T119°C	Gb Db	1,2 21,22	
ISD25	Incremental		IIB T4	Ga	0,1,2	
ISD37	Incremental		IIB T4	Ga	0,1,2	
ISW38	Incremental		IIB T4	Ga	0,1,2	
HD20	Incremental		IIB T4	Ga	0,1,2	
HD25	Incremental		IIB T4	Ga	0,1,2	
Pneumatic						
490	Proximity Switch		I IIC T4 IIIC T80°C	Mb Gb Db	M2 1,2 21,22	
495	Counter		I IIB T4 IIIB T120°C	Mb Gb Db	M2 1,2 21,22	
497	Preset Counter		I IIB T4 IIIB T130°C	Mb Gb Db	M2 1,2 21,22	
499	Timer		I IIB T4 IIIB T120°C	Mb Gb Db	M2 1,2 21,22	

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OVERVIEW OF EXPLOSION PROTECTION CLASSES

EX zones and designations according to IEC, EN, DIN, NEC

EX - Divisions in Class I (Gases / Fog / Fumes)



Groups NEC500 (≈NEC505)

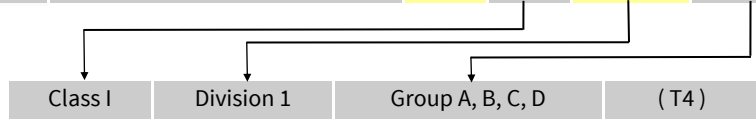
A	Acetylene		IIC
B	Hydrogen		IIC/IIB
C	Ethylene		IIB
D	Propane		IIA
E	Metal dust		IIIC
F	Coal dust		IIIC
G	Grain dust		IIIB

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Classification and marking EX areas according NEC 500

Flammable substances	Temporary behavior of flammable substances in the Ex area	(Zone)	Class	Division	Group
Gases Fog Fumes	Occurs under normal conditions (constantly or frequently)	0	I	1	A, B, C, D*
	Occurs under normal conditions (occasionally)	1	I		
	Occurs under unlikely conditions (infrequently or for a short time e.g. case of error)	2	I	2	A, B, C, D
Dust	Occurs under normal conditions (constantly or frequently)	20	II	1	E, F, G
	Occurs under normal conditions (occasionally)	21	II		
	Occurs under unlikely conditions (infrequently or for a short time e.g. case of error)	22	II	2	F, G
Fibers	Occurs under normal conditions (constantly or frequently)	20	III	1	-
	Occurs under normal conditions (occasionally)	21	III		
	Occurs under unlikely conditions (infrequently or for a short time e.g. case of error)	22	III	2	-



*Characteristics in bold correspond to Hengstler products

AI25



HSD35



ISD25



ISD37
ISW38



HD20



HD25



X25



Type	Interface Function	Class / Division / Group	Approvals
Absolute Encoder			
AI25	SSI, BiSS	Class 1, Div 2, Group A, B, C, D	
Incremental Encoder			
HSD35	Incremental	Class 1, Div 2, Group A, B, C, D Class 2, Div 2, Group F, G	
ISD25 ISD37	Incremental	Class 1, Div 1, Group C, D	
ISW38	Incremental Draw Works	Class 1, Div 1, Group C, D	
HD20 HD25	Incremental	Class 1, Div 1, Group C, D	
X25	Incremental 1/2" Conduit	Class 1, Div 1&2, Group C, D Class 2, Div 1&2, Group E, F, G	

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