EXPLOSION-PROOF CLASSIFICATION

for HL-KD2 Solenoid and Proportional Valves

REFERENCE CATALOG

PRESSURE CONTROL VALVES		
PR*SPUHL	RQM*K*-P	21 515
	P*E*K*	81 316
	ZDE3K*	81 515
VER*HL	DZCE*K*	81 606

FLOW CONTROL VALVES		
	QDE3K	82 225

DIRECTIONAL VALVES		
VSD*HL	D*K*	42 225
	DT3K*	42 215
VED*HL	DS(P)E*K*	83 510

General Information:

This informative technical datasheet displays information about classification and marking of Duplomatic explosion-proof valves range.

Duplomatic MS offers valves with the following certifications:			
ATEX	II 2G	II 2D	I M2
IECEx	Gb	Db	Mb
PESO	Gb		

Instructions for use and maintenance can be found in the related manuals, always supplied toghether with valves.

1 - ATEX CLASSIFICATION AND TEMPERATURES

Duplomatic valves are suitable for application and installation in potentially explosive atmospheres, according to ATEX directive; the supply always includes the declaration of conformity to the directive and the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environments.

Coils assembled on these valves have been separately certified according to ATEX directive and so they are suitable for use in potentially explosive atmospheres.

1.1 - ATEX classification for valves

The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

ATEX II 2G ATEX II 2D	***KD2**	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally.The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.
ATEX I M2	***KDM2**	equipment intended for use in underground parts of mines as well as those parts of surface installations of such mines likely to be endangered by firedamp and/or combustible dust. This equipment is intended to be de-energised in the event of an explosive atmosphere.

1.2 - ATEX marking for valves

valve code		N and V seals	NL seals
***KD2**	for gas	Ⓔx II 2G Ex h IIC T4 Gb (-20°C Ta +80°C)	Ⓔx II 2G Ex h IIC T4 Gb (-40°C Ta +80°C)
	for dusts	Ⓔx II 2D Ex h IIIC T135°C Db (-20°C Ta +80°C)	Ⓔx II 2D Ex h IIIC T135°C Db (-40°C Ta +80°C)
***KD2 /T5**	for gas	Ⓔx II 2G Ex h IIC T5 Gb (-20°C Ta +55°C)	Ⓔx II 2G Ex h IIC T5 Gb (-40°C Ta +55°C)
	for dusts	Ⓔx II 2D Ex h IIIC T100°C Db (-20°C Ta +55°C)	Ⓔx II 2D Ex h IIIC T100°C Db (-40°C Ta +55°C)
***KDM2**	mining	Ⓔx I M2 Ex h I Mb (-20°C Ta +80°C)	Ⓔx I M2 Ex h I Mb (-40°C Ta +80°C)

Specific marking as ATEX 2014/34/EU directive and related technical specifications

Ⓔx [ ] [ ] **Ex h** [ ] **T** [ ] **b** **(- °C Ta + °C)**

Ambient temperature range

Group:
I = mining equipment
II = surface plant equipment

Category of protection:
M2 = (mining) high protection
This equipment is intended to be de-energised in the event of an explosive atmosphere
2G = (surface, atmosphere with gas)
high protection
eligible for category 2 (zone 1)
automatically liable for category 3 (zone 2)
2D = (surface, atmosphere with dusts)
high protection
eligible for category 2 (zone 21)
automatically liable for category 3 (zone 22)

Coil protection type
For mining equipment according to EN 80079-38
For surface plant equipment according to EN 80079-36

EPL - protection level for electrical devices
Mb = for mines - having a "high" level of protection, which has sufficient security that it is unlikely to become a source of ignition in normal operation or during expected malfunctions in the time span between there being an outbreak of gas and the equipment being de-energized.
Gb = for explosive gas atmospheres - having a "high" level of protection, which is not a source of ignition in normal operation or during expected malfunctions.
Db = equipment for explosive dust atmospheres - having a "high" level of protection, which is not a source of ignition in normal operation or during expected malfunctions

Temperature class / max surface temperature
(only for surface plant equipment - Group II)
see p. 1.5

Group of gas / dusts for which the equipment is certified
I = for mining: firedamp and/or combustible dusts
IIC = for gas - eligible also for group IIA and IIB
IIIC = for dusts - eligible also for group IIIA and IIIB

1.3 - ATEX classification of the coils

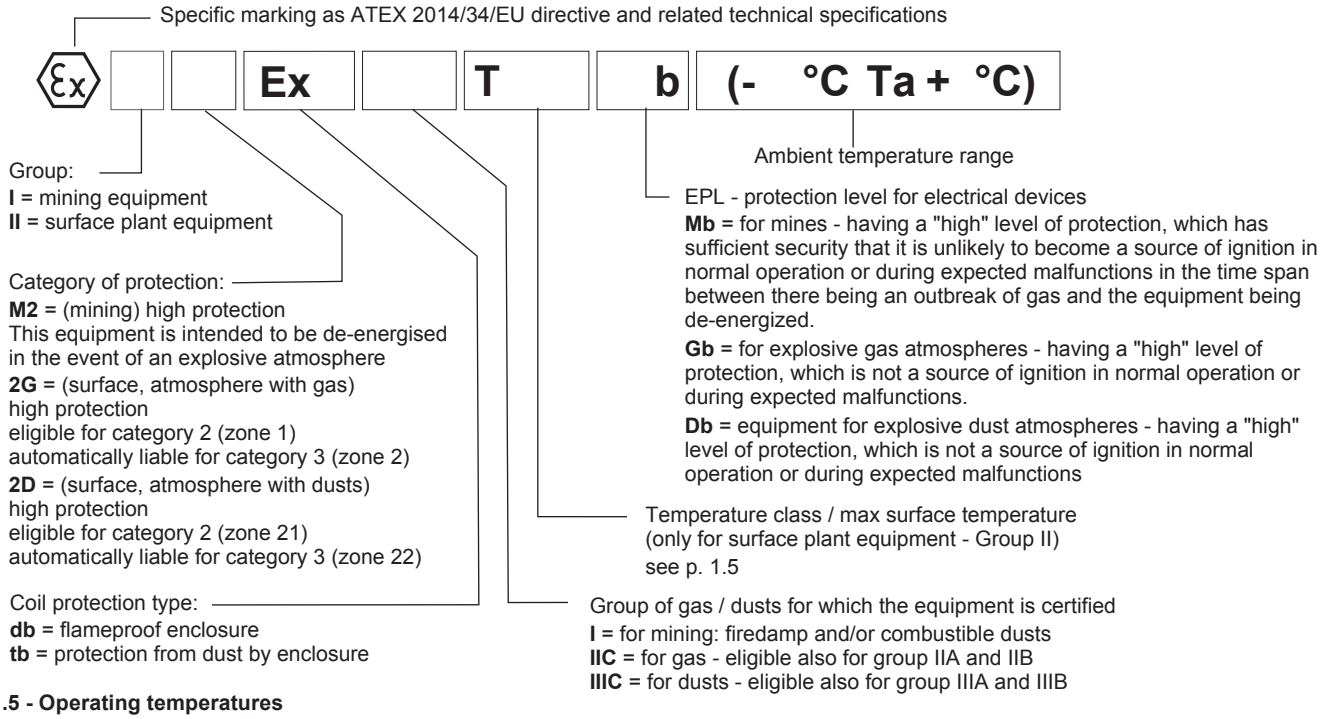
The coil of the explosion-proof valves is ATEX certified and, as such, is identified with its own tag, carries the relative ATEX marking. The mechanical construction of the coil housing is made in order to ensure its resistance to possible internal explosion and to avoid any explosion propagation to the outside environment, matching an “Ex db” type protection (explosion-proof coil).

Moreover, the solenoid is designed to maintain its surface temperature below the limits specified to the relevant class.

1.4 - ATEX marking on coils

EU-type examination certificate: TÜV 25 ATEX 410149 X

for valve type ***KD2**	for gas	Ex II 2G Ex db IIC T4 Gb (-40°C Ta +80°C)
	for dusts	Ex II 2D Ex tb IIIC T135°C Db (-40°C Ta +80°C)
for valve type ***KD2 /T5**	for gas	Ex II 2G Ex db IIC T5 Gb (-40°C Ta +55°C)
	for dusts	Ex II 2D Ex tb IIIC T100°C Db (-40°C Ta +55°C)
for valve type ***KDM2**	mining	Ex I M2 Ex db I Mb (-40°C Ta +80°C)



1.5 - Operating temperatures

These valves are classified according to their maximum surface temperature (EN 13463-1), which must be lower than the ignition temperature of the gases, vapors and dusts for which the area in which they will be used is classified.

The valves in group II can also be used for less limiting temperature classes (surface temperature allowed higher).

		temperature range	**N and V seals**	**NL seals**	Temperature class	eligible also for
ATEX II 2G ATEX II 2D	***KD2**	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas) T135°C (dusts)	T3, T2, T1 T200°C and higher
		of fluid				
	***KD2 /T5**	of ambient	-20 / +55 °C	-40 / +55 °C	T5 (gas) T100°C (dusts)	T4, T3, T2, T1 T135°C and higher
		of fluid	-20 / +60 °C	-40 / +60 °C		
ATEX I M2	***KDM2**	of ambient	-20 / +80 °C	-40 / +80 °C	-	-
		of fluid				

1.6 - Protection degree from atmospheric agents (EN 60529)

Protection degree from atmospheric agents according to EN 60529 is IP66/IP68.

2 - IECEX CLASSIFICATION AND TEMPERATURES

The IECEx certification requires the classification of the electrical equipment only.

Duplomatic supplies valves with IECEx certified coils, suitable for application and installation in potentially explosive atmospheres. The mechanical construction of the coil housing is made in order to ensure its resistance to possible internal explosion and to avoid any explosion propagation to the outside environment, matching an “Ex db” type protection (explosion-proof coil).

Moreover, the solenoid is designed to maintain its surface temperature below the limits specified to the relevant class.

The supply always includes the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environment.

2.1 - IECEx classification

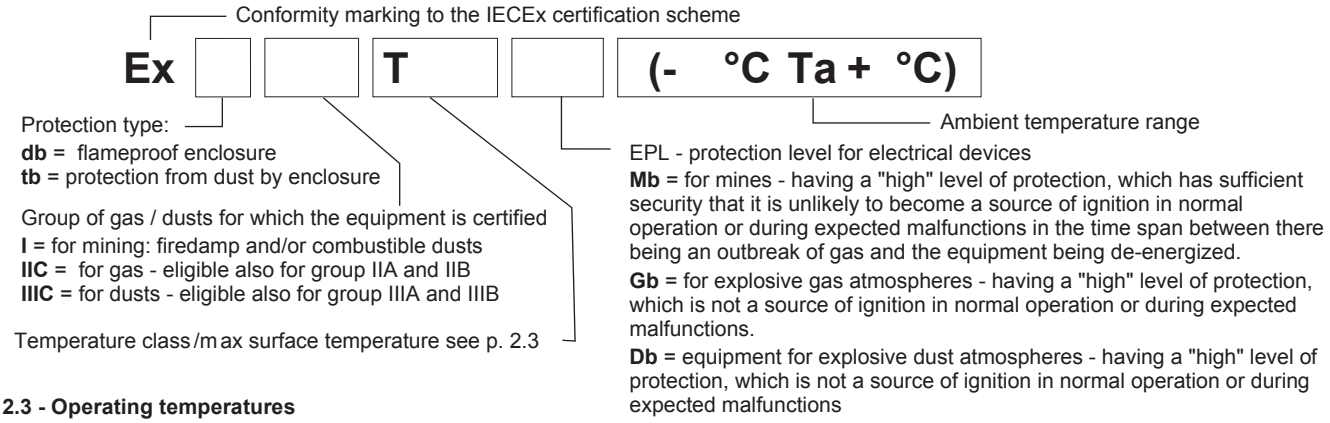
Certificate of conformity (CoC): IECEx TUN 15.0028X
The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

IECEx Gb IECEx Db	***KXD2**	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally.The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.
IECEx Mb	***KXDM2**	equipment intended for use in underground parts of mines as well as those parts of surface installations of such mines likely to be endangered by firedamp and/or combustible dust. This equipment is intended to be de-energised in the event of an explosive atmosphere.

2.2 - IECEx marking

There is a plate with the IECEx mark on each coil.

***KXD2** valves	for gas for dusts	Ex db IIC T4 Gb (-40°C Ta +80°C) Ex tb IIIC T135°C Db (-40°C Ta +80°C)
***KXD2 /T5** valves	for gas for dusts	Ex db IIC T5 Gb (-40°C Ta +55°C) Ex tb IIIC T100°C Db (-40°C Ta +55°C)
***KDM2** valves	mining	Ex db I Mb (-40°C Ta +80°C)



2.3 - Operating temperatures

These valves are classified according to their maximum surface temperature (EN 13463-1), which must be lower than the ignition temperature of the gases, vapors and dusts for which the area in which they will be used is classified.

Valves for surface plants can also be used for less limiting temperature classes (higher surface temperature allowed).

		temperature range	N and V seals	NL seals	Temperature class	eligible also for
IECEx Gb IECEx Db	***KXD2**	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas) T135°C (dusts)	T3, T2, T1 T200°C and higher
		of fluid				
	***KXD2 /T5**	of ambient	-20 / +55 °C	-40 / +55 °C	T5 (gas) T100°C (dusts)	T4, T3, T2, T1 T135°C and higher
		of fluid	-20 / +60 °C	-40 / +60 °C		
IECEx Mb	***KXDM2**	of ambient	-20 / +80 °C	-40 / +80 °C	-	-
		of fluid				

2.4 - Protection degree from atmospheric agents (IEC EN 60529)

Protection degree from atmospheric agents according to IEC EN 60529 is IP66/IP68.

3 - PESO CLASSIFICATION AND TEMPERATURES

The PESO certification requires the classification of the electrical equipment only.

Duplomatic supplies valves with PESO certified coils, suitable for application and installation in potentially explosive atmospheres. The mechanical construction of the coil housing is made in order to ensure its resistance to possible internal explosion and to avoid any explosion propagation to the outside environment, matching an “Ex db” type protection (explosion-proof coil).

Moreover, the solenoid is designed to maintain its surface temperature below the limits specified to the relevant class.

The supply always includes the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environment.

3.1 - PESO classification

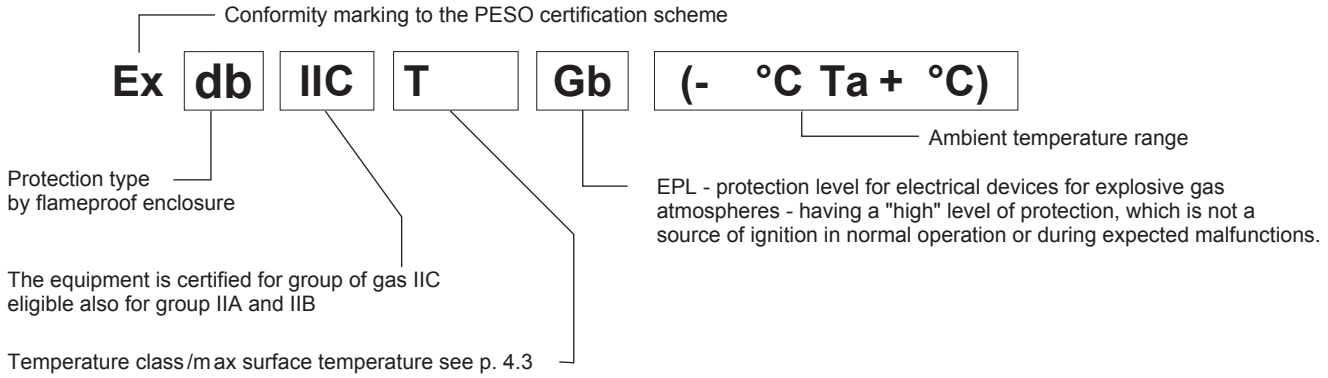
Certificate of conformity: P636522
The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

PESO Gb	***KPD2**	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists are likely to occur occasionally.The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.

3.2 - PESO marking

There is a plate with the PESO mark on each coil.

***KPD2** valves	for gas	Ex db IIC T4 Gb (-40°C Ta +80°C)
***KPD2 /T5** valves	for gas	Ex db IIC T5 Gb (-40°C Ta +55°C)



3.3 - Operating temperatures

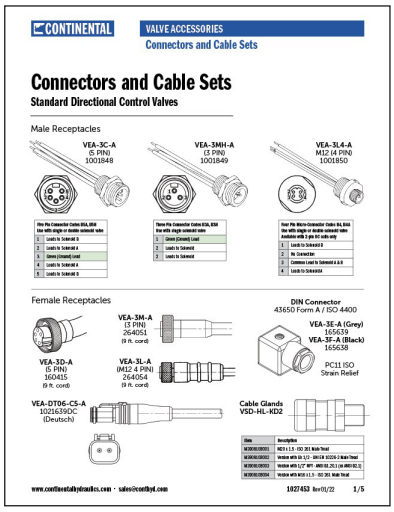
These valves are classified according to their maximum surface temperature (EN 13463-1), which must be lower than the ignition temperature of the gases, vapors and dusts for which the area in which they will be used is classified.

Valves for surface plants can also be used for less limiting temperature classes (higher surface temperature allowed).

		temperature range	**N and V seals**	**NL seals**	Temperature class	eligible also for
PESO Gb	***KPD2**	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas)	T3, T2, T1
		of fluid				
	***KPD2 /T5**	of ambient	-20 / +55 °C	-40 / +55 °C	T5 (gas)	T4, T3, T2, T1
		of fluid	-20 / +60 °C	-40 / +60 °C		

3.4 - Protection degree from atmospheric agents (IEC EN 60529)

Protection degree from atmospheric agents according to IEC EN 60529 is IP66/IP68.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