EXAM
BBG Prüf- und Zertifizier GmbH

Translation

(1) # EC-Type Examination Certificate

(2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use in potentially explosive atmospheres

(3) ## BVS 03 ATEX E 126 X

(4) **Equipment:** **Proximity switch type 6** *** *** **-**

(5) **Manufacturer:** **Elobau Elektrobauelemente GmbH & Co. KG**

(6) **Address:** **D - 88316 Isny/Allgäu**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(8) The certification body of Deutsche Montan Technologie GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 03.2287 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 50014:1997+A1-A2	General requirements	EN 50020:2002	Intrinsic safety 'I"
EN 50028:1987	Encapsulation'm'	EN 50284:1999	Equipment Group II Category 1G
EN 50281-1-1:1998 +A1	Dust explosion protection		

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate

(12) The marking of the equipment shall include the following:

II 1G EEx ia IIB / IIC T5 / T6 or **II 1/2G EEx ia IIC T5 /T6**
II 2G EEx ia IIC T5 /T6 or **II 2G EEx m II T5 / T6**
II 2D IP67 / IP 68 T105°C **Allocation see tables in 15.1.2**

Deutsche Montan Technologie GmbH
Bochum, dated 16. December 2003

Signed: Dr. Jockers
Certification body

Signed: Schumann
Special services unit

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(13) Appendix to

(14) # EC-Type Examination Certificate

BVS 03 ATEX E 126 X

(15) 15.1 Subject and type

Proximity switch type 6** *** *** **-**

15.1.1 Type code 6** * ** * * * ** - **
6ab c de f g h ij - kl

ab type of enclosure
- 10 = flat proximity switch die-cast zinc (GD-ZnAl4Cu1)
- 20 = tube proximity switch PA66
- 50 = tube proximity switch VA1.4571, PG13,5 (M20)
- 71 = MSS VA 1.4571 or 1.4305 or 1.4401, M30
- 80 = hall sensor VA 1.4571 or 1.4401 G3/8.

c Variation
- 0 = standard
- 1 = (code number not used)
- 2 = MSS
- 3 = with protection tube
- V = MSS logical

de
- 10 = normally open contact (NO)
- 20 = normally closed contact (NC)
- 30 = double throw contact (C/O)
- 40 = bistable for (NO) or (NC)
- 45 = bistable for (C/O)
- 50 = semiconductor-npn-output
- 55 = semiconductor-pnp-output
- 61 = 3 x normally open contact
- 62 = 2 x normally open contact
- 71 = normally open and closed contact

f
- M = Encapsulation without external PA-terminal
- N = Encapsulation with external PA-terminal
- O = Encapsulation without external PA-terminal, welded
- P = Encapsulation with external PA-terminal, welded
- I = Intrinsic Safety without external PA-terminal, flanged
- K = Intrinsic Safety with external PA-terminal, flanged
- G = Intrinsic Safety without external PA–terminal, welded
- H = Intrinsic Safety with external PA terminal, welded

g type of interconnection cable *)
- 1 = cable Boflex W (PVC grey) 2 x 075 / 3 x 0,75 / 4 x 0,75
- 2 = cable SIHSI (Silicon red) 2 x 0,75 / 3 x 0,75
- 3 = cable BOY11Y (PUR black) 2 x 0,75 / 3 x 0,75
- 4 = cable LIYCYW (PVC screened) 2 x 0,75 / 3 x 0,75 / 4 x 0,5
- 5 = cable SXCS (Silicon screened) 2 x 0,75 / 3 x 0,75

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	6 =	cable LIFYY11Y (PUR black) 3 x 0,25
	7 =	cable LIYYW (PVC grey) 3 x 0,25
	U =	cable Y-UL 2517 (PVC grey) 3 x 0,75 / 4 x 0,75
	*)	optionally fitted with blue coloured cable coating or marked with blue coloured tube (refers to 1/2G and 2G applications)
h		protection tube
	0 =	no protection tube
	1 =	protection tube type 455 MP 9,8X13,2
	2 =	protection tube type Anaconda D.L.1/2"
ij		coding not relevant to Ex,
kl		cable length above standard value 1 m

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15.1.2 Allocation of different versions of the proximity switch to temperature class, ambient temperature range and apparatus category shall be achieved from the following tables:

Proximity switch type	Category of the switch	additional marking		Features or restrictions	Ambient temperature range
		non intrinsically safe	intrinsically safe		
610 010 M*0 **-** 610 010 N*0 **-** 610 020 M*0 **-** 610 020 N*0 **-** 610 030 M*0 **-** 610 030 N*0 **-** 610 040 M*0 **-** 610 040 N*0 **-** 610 045 M*0 **-** 610 045 N*0 **-**	2G	EEx m II T5/T6		IP67; see 17.4	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
620 010 M*0 **-** 620 020 M*0 **-** 620 030 M*0 **-**	2G	EEx m II T5/T6		IP67; see 17.4	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
650 *10 M** **-** 650 *10 N** **-** 650 *30 M** **-** 650 *30 N** **-**	2G	EEx m II T5/T6		IP67; see 17.4	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
671 26* M*0 **-** 671 26* N*0 **-** 671 26* O*0 **-** 671 26* P*0 **-** 671 V62 M*0 **-** 671 V62 N*0 **-** 671 V62 O*0 **-** 671 V62 P*0 **-** 671 271 M*0 **-** 671 271 N*0 **-** 671 271 O*0 **-** 671 271 P*0 **-**	2G	EEx m II T5/T6		IP68 (10 bar); I ≤ 60 mA; see 17.4	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
671 26* M*0 **-** 671 26* N*0 **-** 671 26* O*0 **-** 671 26* P*0 **-** 671 V62 M*0 **-** 671 V62 N*0 **-** 671 V62 O*0 **-** 671 V62 P*0 **-** 671 271 M*0 **-** 671 271 N*0 **-** 671 271 O*0 **-** 671 271 P*0 **-**	2G	EEx m II T5/T6		IP68 (10 bar); 60 mA ≤ I ≤ 150 mA; see 17.4	- 25° C ≤ T_a ≤ 50° C (T6) 70° C (T5)
680 0** M*0 **-** 680 0** N*0 **-**	2G	EEx m II T5/T6		IP68 (10 bar); see 17.4	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)

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Proximity switch type	Category of the switch	additional marking		Features or restrictions	Ambient temperature range
		non intrinsically safe	intrinsically safe		
610 010 I*0 **-** 610 010 K*0 **-** 610 020 I*0 **-** 610 020 K*0 **-** 610 030 I*0 **-** 610 030 K*0 **-** 610 040 I*0 **-** 610 040 K*0 **-** 610 045 I*0 **-** 610 045 K*0 **-**	2G		EEx ia IIC T5/T6	IP67	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
620 010 I*0 **-** 620 020 I*0 **-** 620 030 I*0 **-**	2G		EEx ia IIC T5/T6	IP67; see 17.1.2	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
650 *10 I** **-** 650 *10 K** **-** 650 *30 I** **-** 650 *30 K** **-**	2G		EEx ia IIC T5/T6	IP67	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
671 26* I*0 **-** 671 26* K*0 **-** 671 26* G*0 **-** 671 26* H*0 **-** 671 V62 I*0 **-** 671 V62 K*0 **-** 671 V62 G*0 **-** 671 V62 H*0 **-** 671 271 I*0 **-** 671 271 K*0 **-** 671 271 G*0 **-** 671 271 H*0 **-**	2G		EEx ia IIC T5/T6	IP68 (10 bar); I_i ≤ 60 mA	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)
671 26* I*0 **-** 671 26* K*0 **-** 671 26* G*0 **-** 671 26* H*0 **-** 671 V62 I*0 **-** 671 V62 K*0 **-** 671 V62 G*0 **-** 671 V62 H*0 **-** 671 271 I*0 **-** 671 271 K*0 **-** 671 271 G*0 **-** 671 271 H*0 **-**	2G		EEx ia IIC T5/T6	IP68 (10 bar); 60 mA ≤ I_i ≤ 150 mA; see 17.1.1	- 25° C ≤ T_a ≤ 50° C (T6) 70° C (T5)
680 0** I*0 **-** 680 0** K*0 **-**	2G		EEx ia IIC T5/T6	IP68 (10 bar);	- 25° C ≤ T_a ≤ 70° C (T6) 85° C (T5)

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Proximity switch type	Category of the switch	additional marking		Features or restrictions	Ambient temperature range
		non intrinsically safe	intrinsically safe		
620 010 I*0 **-** 620 020 I*0 **-** 620 030 I*0 **-**	1/2G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5$ W see 17.2.2	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 *10 K** **-** 650 *10 I** **-** 650 *30 K** **-** 650 *30 I** **_**	1/2G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5$ W; see 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 26* I*0 **-** 671 26* K*0 **-** 671 26* G*0 **-** 671 26* H*0 **-** 671 V62 I*0 **-** 671 V62 K*0 **-** 671 V62 G*0 **-** 671 V62 H*0 **-** 671 271 I*0 **-** 671 271 K*0 **-** 671 271 G*0 **-** 671 271 H*0 **-**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); $I_i \leq 60$ mA; see 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 26* I*0 **-** 671 26* K*0 **-** 671 26* G*0 **-** 671 26* H*0 **-** 671 V62 I*0 **-** 671 V62 K*0 **-** 671 V62 G*0 **-** 671 V62 H*0 **-** 671 271 I*0 **-** 671 271 K*0 **-** 671 271 G*0 **-** 671 271 H*0 **-**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); 60 mA $\leq I_i \leq$ 150 mA; see 17.2.1 und 17.2.3	- 25° C $\leq T_a \leq$ 50° C (T6) 70° C (T5)
680 0** I*0 **-** 680 0** K*0 **-**	1/2G		EEx ia IIC T5/T6	IP68 (10 bar); see 17.2.1	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)

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Proximity switch type	Category of the switch	additional marking		Features or restrictions	Ambient temperature range
		non intrinsically safe	intrinsically safe		
610 0** M30 **-** 610 0** M20 **-** 610 0** MU0 **-** 610 0** M60 **-** 610 0** M70 **-** 610 0** M10 **-** 610 0** N30 **-** 610 0** N20 **-** 610 0** NU0 **-** 610 0** N60 **-** 610 0** N70 **-** 610 0** N10 **-**	2D	IP67 T105°C		see 17.5	- 25° C ≤ T_a ≤ 85° C
620 0*0 M30 **-** 620 0*0 M20 **-** 620 0*0 MU0 **-** 620 0*0 M60 **-** 620 0*0 M70 **-** 620 0*0 M10 **-**	2D	IP67 T105°C		see 17.5	- 25° C ≤ T_a ≤ 85° C
650 0/3*0 M30 **-** 650 0/3*0 M20 **-** 650 0/3*0 MU0 **-** 650 0/3*0 M60 **-** 650 0/3*0 M70 **-** 650 0/3*0 M10 **-** 650 0/3*0 N30 **-** 650 0/3*0 N20 **-** 650 0/3*0 NU0 **-** 650 0/3*0 N60 **-** 650 0/3*0 N70 **-** 650 0/3*0 N10 **-** 650 3*0 M*1 **-** 650 3*0 N*1 **-**	2D	IP67 T105°C		see 17.5	- 25° C ≤ T_a ≤ 85° C
671 *** *30 **-** 671 *** *20 **-** 671 *** *U0 **-** 671 *** *60 **-** 671 *** *70 **-** 671 *** *10 **-**	2D	IP68 T105°C		IP68 (10 bar); I ≤ 60 mA; see 17.5	- 25° C ≤ T_a ≤ 85° C
671 *** *30 **-** 671 *** *20 **-** 671 *** *U0 **-** 671 *** *60 **-** 671 *** *70 **-** 671 *** *10 **-**	2D	IP68 T105°C		IP68 (10 bar); 60 mA ≤ I ≤ 150 mA; see 17.5	- 25° C ≤ T_a ≤ 70° C
680 0** M60 **-** 680 0** M70 **-** 680 0** N60 **-** 680 0** N70 **-**	2D	IP68 T105°C		IP68 (10 bar); see 17.5	- 25° C ≤ T_a ≤ 85° C

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Proximity switch type	Category of the switch	additional marking		Features or restrictions	Ambient temperature range
		non intrinsically safe	intrinsically safe		
610 0** I60 **-** 610 0** I70 **-** 610 0** K60 **-** 610 0** K70 **-**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5$ W see 17.3	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
620 0*0 I60 **-** 620 0*0 I70 **-**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5$ W see 17.3	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 0*0 I60 **-** 650 0*0 I70 **-** 650 0*0 K60 **-** 650 0*0 K70 **-** 650 3*0 I60 **-** 650 3*0 I70 **-** 650 3*0 K60 **-** 650 3*0 K70 **-** 650 3*0 I*2 **-** 650 3*0 K*2 **-**	1G		EEx ia IIB T5/T6	IP67; $P_i \leq 0,5$ W see 17.3	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
650 3*0 I*1 **-** 650 3*0 K*1 **-**	1G		EEx ia IIC T5/T6	IP67; $P_i \leq 0,5$ W see 17.3	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 *** *60 **-** 671 *** *70 **-**	1G		EEx ia IIB T5/T6	IP68 (10 bar); $I \leq 60$ mA; see 17.3	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)
671 *** *60 **-** 671 *** *70 **-**	1G		EEx ia IIB T5/T6	IP68 (10 bar); 60 mA $\leq I \leq$ 150 mA; see 17.5	- 25° C $\leq T_a \leq$ 50° C (T6) 70° C (T5)
680 0** I60 **-** 680 0** I70 **-** 680 0** K60 **-** 680 0** K70 **-**	1G		EEx ia IIB T5/T6	IP68 (10 bar); see 17.3	- 25° C $\leq T_a \leq$ 70° C (T6) 85° C (T5)

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15.2 Description

The proximity switch type 610 0** **0 **-** consist of a metallic enclosure (GD - Zn Al 4 Cu 1) providing a reed-contact (contact active on / active off or combination active on/off) embedded in casting compound.
An interconnection cable providing open leads is led into the enclosure by means of suitable cable gland and permanently connected to the contact pads.

The proximity switch type 620 0** **0 **-** consist of a cylindrical plastics enclosure (PA66) providing a reed-contact (contact active on / active off or combination active on/off) embedded in casting compound.
An interconnection cable providing open leads is led into the enclosure by means of suitable cable gland and permanently connected to the contact pads.

The proximity switch type 650 0*0 **0 **-** consist of a tubular plastics enclosure providing a reed-contact (contact active on / active off or combination active on/off) embedded in casting compound.
The plastics enclosure is covered by means of a cylindrical metallic enclosure (material 1.4571, 1.4305 or 1.4401).
An interconnection cable providing open leads is led into the enclosure by means of suitable cable gland and permanently connected to the contact pads.

The proximity switch type 650 3*0 **0 **-** consist of a tubular plastics enclosure providing a reed-contact (contact active on / active off or combination active on/off) embedded in casting compound. The plastics enclosure is covered by means of a cylindrical metallic enclosure (material 1.4571, 1.4305 or 1.4401).
An interconnection cable providing open leads is led into the enclosure by means of a suitable cable gland and permanently connected to the contact pads.
The enclosure is fitted with a threaded tube connection facility for mounting purposes of a customer selected protection tube.

The proximity switch type 650 3*0 **1 **-** and type 650 3*0 **2 **-** consist of a tubular plastics enclosure providing a reed-contact (contact active on / active off or combination active on/off) embedded in casting compound. The plastics enclosure is covered by means of a cylindrical metallic enclosure (material 1.4571, 1.4305 or 1.4401).
An interconnection cable providing open leads is led into the enclosure by means of suitable cable gland and permanently connected to the contact pads. The enclosure is fitted with a threaded tube connection facility. The applicable protection tube version in specified in 15.1.1 type code „h" .

The proximity switch type 671 *** **0 **-** consist of a cylindrical metallic enclosure (material no. 1.4571, 1.4305 or 1.4401) providing - due to variation - two or three resistors and two or three reed-contacts (3 times active closed, 2 times active closed, active closed / active open). The components are embedded in casting compound.
An interconnection cable providing open leads is led into the enclosure by means of suitable cable gland and permanently connected to the contact pads.

The proximity switch type 680 *** **0 **-** consist of a tubular plastics enclosure containing a hybrid-circuitry embedded in casting compound (NPN or PNP output) providing electronic components and a magnetic field sensor. The plastics enclosure is covered by means of a cylindrical metallic enclosure (material no. 1.4571, 1.4305 or 1.4401).
An interconnection cable providing open leads is led into the enclosure by means of a suitable cable gland and permanently connected to the contact pads.

The proximity switches marked with letter "M", "N", "O" or "P" in column "f" of the type code are designated for interconnection to non intrinsically safe circuits.
Marking letters „O" and „P" for MSS welding only.

The proximity switches marked with letter "I", "K", "G" or "H" in column "f" of the type code are designated for interconnection to intrinsically safe circuits.
Marking letters „G" and „H" for MSS welding only.

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15.3 Parameters

15.31 Proximity switches operated non intrinsically safe

15.3.1.1 Proximity switches of type series 610 0** M/N*0 **-**

Type	610 010 **0**-** 610 020 **0**-**	610 030 **0**-**	610 040 **0**-**	610 045 **0**-**
Nominal voltage	AC/DC 250 V	AC/DC 230 V	AC/DC 250 V	AC/DC 230 V
Nominal current	3 A	1 A	1 A	0,6 A
Nominal power	100 VA / 100 W	60 VA / 60 W	60 VA / 60 W	45 VA / 45 W
Temperature class	T6 / T5	T6 / T5	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	70°C / 85°C	70°C / 85°C	70°C / 85°C

15.3.1.2 Proximity switches of type series 620 0** M/N*0 **-**

Type	620 010 **0**-** 620 020 **0**-**	620 030 **0**-**
Nominal voltage	AC/DC 230 V	AC/DC 48 V
Nominal current	2 A	1 A
Nominal power	60 VA / 60 W	20 VA / 20 W
Temperature class	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	70°C / 85°C

15.3.1.3 Proximity switches of type series 650 *** M/N*** **-**

Type	650 *10 *** **-**	650 *30 *** **-**
Nominal voltage	AC/DC 250 V	AC/DC 230 V
Nominal current	3 A	1 A
Nominal power	100 VA / 100 W	60 VA / 60 W
Temperature class	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	70°C / 85°C

15.3.1.4 Proximity switches of type series 671 *** M/N/O/P** **-**

Type	671 *** *** **-**	671 *** *** **-**
Nominal voltage	AC/DC 24 V	AC/DC 24 V
Nominal current (continuous)	60 mA	150 mA
Nominal current (peak value)	500 mA for two seconds	500 mA for two seconds
Nominal switched power	5 VA / 5 W	5 VA / 5 W
Temperature class	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	50°C / 70°C

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15.3.1.5 Proximity switches of type series 680 0** M/N*0 **-**

Type	680 0** **0 **-**
Nominal voltage	DC 10 bis 30 V
Nominal current	200 mA
Nominal power	0,5. W
Temperature class	T6 / T5
max. ambient-temperature	70°C / 85°C

15.3.2 Proximity switches operated intrinsically safe

15.3.2.1 Proximity switches of type series 610 0** I/K*0 **-**

Type	610 010 **0**-** 610 020 **0**-**	610 030 **0**-**	610 040 **0**-**	610 045 **0**-**
Voltage U_i	AC/DC 60 V	AC/DC 60 V	AC/DC 60 V	AC/DC 60 V
Current I_i	3 A	1 A	1 A	0,6 A
Power P_i	500 mW *)	500 mW *)	500 mW *)	500 mW *)
effective internal capacitance C_i	see 15.3.2.6	see 15.3.2.6	see 15.3.2.6	see 15.3.2.6
effective internal inductance L_i	see 15.3.2.6	see 15.3.2.6	see 15.3.2.6	see 15.3.2.6
Temperature class	T6 / T5	T6 / T5	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	70°C / 85°C	70°C / 85°C	70°C / 85°C

*) refers to 1G and 1/2G application; not relevant for 2G application

15.3.2.2 Proximity switches of type series 620 0** I/K*0 **-**

Type	620 010 **0**-** 620 020 **0**-**	620 030 **0**-**
Voltage U_i	AC/DC 60 V	AC/DC 48 V
Current I_i	2 A	1 A
Power P_i	500 mW *)	500 mW *)
effective internal capacitance C_i	see 15.3.2.6	see 15.3.2.6
effective internal inductance L_i	see 15.3.2.6	see 15.3.2.6
Temperature class	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	70°C / 85°C

*) refers to 1G and 1/2G application; not relevant for 2G application

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15.3.2.3 Proximity switches of type series 650 *** I/K** **-**

Type	650 *10 *** **-**	650 *30 *** **-**
Voltage U_i	AC/DC 60 V	AC/DC 60 V
Current I_i	3 A	1 A
Power P_i	500 mW ')	500 mW *)
effective internal capacitance C_i	see 15.3.2.6	see 15.3.2.6
effective internal inductance L_i	see 15.3.2.6	see 15.3.2.6
Temperature class	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	70°C / 85°C

*) refers to 1G and 1/2G application; not relevant for 2G application

15.3.2.4 Proximity switches of type series 671 *** I/K/G/H** **-**

Type	671 *** *** **-**	671 *** *** **-**
Voltage U_i	AC/DC 24 V	AC/DC 24 V
Current I_i (continuous)	60 mA	150 mA
Current I_i (peak value)	500 mA for two seconds	500 mA for two seconds
effective internal capacitance C_i	see 15.3.2.6	see 15.3.2.6
effective internal inductance L_i	see 15.3.2.6	see 15.3.2.6
Power P_i	500 mW	500 mW
Temperature class	T6 / T5	T6 / T5
max. ambient-temperature	70°C / 85°C	50° C / 70°C

15.3.2.5 Proximity switches of type series 680 0** I/K*0 **-**

Type	680 0** **0 **-**
Voltage U_i	DC 16 V
Current I_i	200 mA
Power P_i	500. mW
effective internal capacitance C_i	150 nF + xx nF "xx" see 15.3.2.6
effective internal inductance L_i	see 15.3.2.6
Temperature class	T6 / T5
max. ambient-temperature	70°C / 85°C

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15.3.2.6 Effective internal capacitance and inductance

Cable length	≤ 10 m	≤ 50 m	≤ 100 m	≤ 200 m
C_i	2 nF	7 nF	12 nF	24 nF
L_i	10 µH	50 µH	100 µH	200 µH

15.3.3 Ambient temperature range:
- 25° C ≤ T_a ≤ 70° C (temperature class T6)
- 25° C ≤ Ta ≤ 85° C (temperature class T5)
- 25° C ≤ T_a ≤ 50° C / 70° C (temperature class T6 / T5) *)

*) applies to proximity switches of type series 671 *** *** **-** operated with 60 mA ≤ I_i ≤ 150 mA

(16) Test and assessment report
BVS PP 03.2287 EG, as of December 16, 2003

(17) Special conditions for safe use

17.1 Proximity switches operated intrinsically safe providing 2G EEx ia IIC T* marking

17.1.1 Proximity switches type 671 *** *** **-**

For the proximity switches operated with 60 mA ≤ I_i ≤ 150 mA temperature class T6 / T5 at maximum ambient temperature +50° C / + 70° C applies.

17.1.2 Proximity switches type 620 0** **0 **-**

The metallic cable entry of the proximity switch shall be incorporated in the equipotential bonding. This condition refers to Group IIC applications only.

17.2 Proximity switches operated intrinsically safe providing 1/2G EEx ia IIC T* marking

17.2.1 Proximity switches type 650 *** *** **-**, type 671 *** *** **-**, type 680 *** *** **-**

17.2.1.1 The installation of the proximity switch in the separation wall to areas requiring 1G apparatus shall be carried out in such a way that a degree of protection IP67 according to EN 60529 is achieved as a minimum

17.2.1.2 The installation of the proximity switch in the separation wall to areas requiring 1G apparatus shall be carried out in such a way that incorporation of the metallic enclosure of the proximity switch in the equipotential bonding is achieved

17.2.1.3 Manufacturer's technical information related to use of the proximity switch in contact with aggressive / corrosive media and to avoid any risk of mechanical impact shall be observed

17.2.2 Proximity switch type 620 *** *** **-**

17.2.2.1 The installation of the proximity switch in the separation wall shall be carried out in such a way that the unprotected surface of plastics material in areas requiring category 1G apparatus shall not exceed 4 cm^2. This condition refers to Group IIC applications only.

17.2.2.2 The installation of the proximity switch in the separation wall to areas requiring 1G apparatus shall be carried out in such a way that incorporation of the metallic locknuts of the proximity switch in the equipotential bonding is achieved.

17.2.2.3 In case of installation of the proximity switch in the separation wall to areas requiring category 1G apparatus locknuts made of plastics material shall not be used.

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17.2.2.4 Manufacturer's technical information related to use of the proximity switch in contact with aggressive media and to avoid any risk of mechanical impact shall be observed

17.2.2.5 The metallic cable entry of the proximity switch shall be incorporated in the equipotential bonding. This condition refers to Group IIC applications only.

17.2.3 Proximity switches type 671 *** *** **-**

For the proximity switches operated with 60 mA ≤ I_i ≤ 150 mA temperature class T6 / T5 at maximum ambient temperature +50° C / + 70° C applies.

17.3 Proximity switches operated intrinsically safe providing 1G EEx ia IIB / IIC T* marking

17.3.1 General

The installation of the cable entry / mounting facility of the interconnection cable in the separation wall to areas requiring 1G apparatus shall be carried out in such a way that a degree of protection IP67 according to EN 60529 is achieved as a minimum.

17.3.2 Proximity switches type 610 *** *** **-**, type 650 *** *** **-**,
type 671 *** *** **-**, type 680 *** *** **-**

17.3.2.1 The installation of the proximity switch shall be carried out in such a way that incorporation of the metallic enclosure of the proximity switch in the equipotential bonding is achieved.

17.3.2.2 Manufacturer's technical information related to use of the proximity switch in contact with aggressive / corrosive media and to avoid any risk of mechanical impact shall be observed

17.3.3 Proximity switches type 610 *** *** **-**

The unprotected surface of the casting compound shall be covered by the mounting plate against light admittance. This condition refers to versions providing casting compound Micafil type Mikares X1087NC white; hardener P 978.

17.3.4 Proximity switches type 620 *** *** **-**

17.3.4.1 The metallic enclosure of the proximity switch shall be incorporated in the equipotential bonding.

17.3.4.2 The metallic locknuts of the proximity switch shall be incorporated in the equipotential bonding.

17.3.4.3 The proximity switch is suitable for Group IIB or IIA application only.

17.3.4.4 Manufacturer's technical information related to use of the proximity switch in contact with aggressive media and to avoid any risk of mechanical impact shall be observed

17.3.5 Proximity switches type 671 *** *** **-**

For the proximity switches operated with 60 mA ≤ I_i ≤ 150 mA temperature class T6 / T5 at maximum ambient temperature +50° C / + 70° C applies.

17.4 Proximity switches operated non intrinsically safe providing 2G EEx m II T* marking

17.4.1 General

17.4.1.1 The unterminated free cable ends of the proximity switch type 6** *** *** **-** shall be connected according to applicable local installation rules.

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17.4.1.2 A fuse shall be present in the circuit of the proximity switch type 6** *** *** **-** providing a rated value adapted to the rated values of the contact / the electronic circuitry and providing a breaking capacity adapted - as a minimum - to the prospective short circuit current of the local mains power supply.

17.4.2 Proximity switches type 610 *** *** **-**

The unprotected surface of the casting compound shall be covered by the mounting plate against light admittance. This condition refers to versions providing casting compound Micafil type Mikares X1087NC white; hardener P 978.

17.4.3 Proximity switches type 620 0** **0 **-**

17.4.3.1 Installation of the proximity switch shall provide protection against mechanical impact.

17.4.3.2 The metallic cable entry of the proximity switch shall be incorporated in the equipotential bonding. This condition refers to Group IIC applications only.

17.4.4 Proximity switches type 671 *** *** **-**

For the proximity switches operated with 60 mA ≤ I ≤ 150 mA temperature class T6 / T5 at maximum ambient temperature +50° C / + 70° C applies.

17.5 Proximity switches operated non intrinsically safe providing 2D marking

17.5.1 General

17.5.1.1 The unterminated free cable ends of the proximity switch type 6** *** *** **-** shall be connected according to applicable local installation rules .

17.5.1.2 The metallic enclosure of the proximity switch shall be incorporated in the equipotential bonding.

17.5.1.3 A fuse shall be present in the circuit of the proximity switch type 6** *** *** **-** providing a rated value adapted to the rated values of the contact / the electronic circuitry and providing a breaking capacity adapted - as a minimum - to the prospective short circuit current of the local mains power supply.

17.5.2 Proximity switches type 610 *** *** **-**

17.5.2.1 The unprotected surface of the casting compound shall be covered by the mounting plate against light admittance. This condition refers to versions providing casting compound Micafil type Mikares X1087NC white; Hardener P 978.

17.5.3 Proximity switches type 620 0** **0 **-**

17.5.3.1 Installation of the proximity switch shall provide protection against mechanical impact..

17.5.3.2 The metallic locknuts of the proximity switch shall be incorporated in the equipotential bonding.

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EXAM
BBG Prüf- und Zertifizier GmbH

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 04.05.2004
BVS-Scha/Mi E 0817/04

EXAM BBG Prüf- und Zertifizier GmbH

Certification body

Special services unit

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EC-Conformity Declaration

according to EC-directive 94/9/EG (ATEX)

Hereby we,

Fa. elobau Elektrobauelemente GmbH & Co. KG
88306 Isny / Allgäu P.O. Box 12 65
Tel. 07562 / 9700-0 Fax. 07562 / 9700-10

confirm that the below mentioned components fulfil the particular basic requirements of the EC-guideline according to their design and construction. If the components are modified without our agreement or if they are not used according to our instructions this declaration is no longer valid.
Please note our operating instructions "Proximity Switches, Series 6....

Description of the Components:	***...Proximity Switches; Cylindrical Proximity Switches (PA)...*** ***.....Cylindrical Proximites Switches (Stainless Steel).....***
Part No:	***..... 610 ... .-..; 620 ... .-..; 650 ... .- .....***
Particular EC-Guidelines:	Directive 94/9EG (ATEX) Certificate: BVS 03 ATEX E 126 X Quality Audit: TÜV Produkt Service GmbH; Ident-N° 0123 EC-Directive Electromagnetic Compatibility (89/336/EEC i.d.F 92/31/EEC) EC-Low-Voltage -Directive (73/23/EEC)
Applied Harmonized Norms especially:	EN 60947-1, EN 61000-4-4, IEC 65 (CO) 39 EN 50014 General Conditions EN 50028 Encapsulation (m) EN 50281-1-1 Dust explosion proof EN 50020 Intrinsically safe (ia) EN 50284 Equipment group II, category 1G
Applied National Norms and Technical Specifications Especially:	VDE 0660 Part 100, VDE 0843 Part 4
Date/Signature of Producer:	**.....19.01.2004.....**
Details of the Signatory:	**.....Management / Mr. Hetzer .....**

Registration _____ _____ _____/_____
machine safety component no. current no.