Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(1) # EC-type-examination Certificate

(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 97 ATEX 2192

(4) Equipment: Limit monitoring indicator SINEAX C 402 type 402-1... and
Limit monitoring indicator SINEAX C 402 type 402-4... resp.
Limit monitoring indicator SIRAX C 402 type 402-6...

(5) Manufacturer: Camille Bauer AG

(6) Address: Aargauerstr. 7, CH-5610 Wohlen

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC 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 confidential report PTB Ex 97-27278.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

DIN EN 50014:1994-03 **DIN EN 50020:1996-04** **DIN EN 50014/prA1:1996**

(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 and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

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

II (1) G [EEx ia] IIC

Zertifizierungsstelle Explosionsschutz
By order

Dr.-Ing. U. Johannsmeier
Oberregierungsrat

Braunschweig, 26.09.1997

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(13) # Schedule

(14) ## EC-type-examination Certificate No. PTB 97 ATEX 2192

(15) Description of equipment

The limit monitoring indicator is used for the electrical isolation and evaluation of the intrinsically safe input signal. Direct current and direct voltage signals are detected as input quantities.

The limit monitoring indicator shall be installed outside the explosion hazardous area only.

The limit monitoring indicator SIRAX C 402 of type 402-6... is only used to be plugged on the associated apparatus rack or on the apparatus rack SIRAX BP 902 of type 902-2... with EC-type-examination certificate PTB 97 ATEX 2113, manufactured by Camille Bauer AG.

The maximum permissible ambient temperature of the limit monitoring indicator SINEAX C 402 of type 402-1... and of type 402-4... is 55 °C.
The maximum permissible ambient temperature of the limit monitoring indicator SIRAX C 402 of type 402-6... is 40 °C.

Electrical data

The indicated terminal clamps refer to the designs SINEAX C 402 of type 402-1... and SINEAX C 402 of type 402-4...
The indicated connections refer to the design SIRAX C 402 of type 402-6...

Auxiliary power	**type 402-13... resp. type 402-43... resp. type 402-63...**		
(terminal clamps 10 and 5 resp. 14 and 20)	direct voltage	24 - 60 V -15% / +33%	(U_m = 125 V)
	or		
	alternating voltage	24 - 60 V ± 15%	(U_m = 253 V)
	resp.		
	type 402-14... resp. type 402-44... resp. type 402-64...		
	direct voltage	85 - 110 V -15% / +10%	(U_m = 125 V)
	or		
	alternating voltage	85 - 230 V ± 10%	(U_m = 253 V)
Input circuit	type of protection Intrinsic Safety	EEx ia IIC/IIB	
	resp.	EEx ib IIC/IIB	
(terminal clamps 1, 6, 11 resp. connections 1, 3, 5)	(linear output characteristic)		
	maximum values:	U_o = 6 V	
		I_o = 63 µA	

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	IIC		resp. IIB	
max. permissible external inductance	1	H	1	H
max. permissible external capacitance	40	µF	1000	µF

resp.

only for connection to certified intrinsically safe circuits with the following maximum value:

U = 30 V

effective internal inductance: L_i = 20 µH
effective internal capacitance: C_i = 20 nF

The following table shows the assignment of the maximum permissible external inductance (L_o) and capacitance (C_o) to the maximum voltage (U_i) and maximum current (I_i) for the connection to a certified intrinsically safe active circuit with linear (resistive) current limiting:

U_i	I_i	explosion group			
		IIC		IIB	
		L_o	C_o	L_o	C_o
13 V	29 mA	40 mH	258 nF	150 mH	1580 nF
19 V	29 mA	40 mH	110 nF	150 mH	840 nF
24 V	29 mA	40 mH	66 nF	150 mH	560 nF
30 V	29 mA	40 mH	42 nF	150 mH	370 nF
13 V	59 mA	10 mH	258 nF	40 mH	1580 nF
19 V	59 mA	10 mH	110 nF	40 mH	840 nF
24 V	59 mA	10 mH	66 nF	40 mH	560 nF
30 V	59 mA	10 mH	42 nF	40 mH	370 nF
13 V	79 mA	6 mH	258 nF	22 mH	1580 nF
19 V	79 mA	6 mH	110 nF	22 mH	840 nF
24 V	79 mA	6 mH	66 nF	22 mH	560 nF
30 V	79 mA	6 mH	42 nF	22 mH	370 nF
13 V	100 mA	3 mH	258 nF	12 mH	1580 nF
19 V	100 mA	3 mH	110 nF	12 mH	840 nF
24 V	100 mA	3 mH	66 nF	12 mH	560 nF
30 V	100 mA	3 mH	42 nF	12 mH	370 nF

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The following table shows the assignment of the maxmimum permissible external inductance (L_o) and capacitance (C_o) to the maximum voltage (U_i) and maximum current (I_i) for the connection to a certified intrinsically safe active circuit with electronic current limiting:

U_i	I_i	type of protection			
		EEx ib IIC		EEx ib IIB	
		L_o	C_o	L_o	C_o
13 V	29 mA	5 mH	147 nF	10 mH	635 nF
19 V	29 mA	9 mH	68 nF	25 mH	367 nF
24 V	29 mA	1,8 mH	31 nF	25 mH	221 nF
30 V	29 mA	not permitted	not permitted	10 mH	137 nF
13 V	59 mA	3 mH	148 nF	10 mH	635 nF
19 V	59 mA	0,33 mH	35 nF	15 mH	225 nF
24 V	59 mA	not permitted	not permitted	5 mH	179 nF
13 V	79 mA	1,5 mH	146 nF	10 mH	459 nF
19 V	79 mA	not permitted	not permitted	6 mH	240 nF
24 V	79 mA	not permitted	not permitted	0,49 mH	59 nF
13 V	100 mA	0,7 mH	143 nF	6 mH	442 nF
19 V	100 mA	not permitted	not permitted	1,8 mH	312 nF

Contact circuits (terminal clamps 4, 9,14 resp. 3, 8, 13 resp. connections 26, 28, 30 resp. 27, 29, 31)	switching contacts			
	alternating voltage	up to 250 V, up to	5	A
	direct voltage	up to 125 V, up to	0,24	A
	or	up to 30 V, up to	1	A

additional limit-value contacts for design SINEAX C402-4... only

Contact circuits (terminal clamps 19, 24, 29 resp. 18, 23, 28)	switching contacts			
	alternating voltage	up to 250 V, up to	5	A
	direct voltage	up to 125 V, up to	0,24	A
	or	up to 30 V, up to	1	A

The input circuit is safely electrically isolated from all further circuits up to a peak value of the nominal voltage of 375 V.

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(16) Report PTB Ex 97-27278

(17) Special conditions for safe use

not applicable

(18) Essential Health and Safety Requirements

met by standards

Zertifizierungsstelle Explosionsschutz
By order

Dr.-Ing. U. Johannsmeyer
Oberregierungsrat

Braunschweig, 26.09.1997