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 2074 X

(4) Equipment: Measuring transducer SINEAX V604 type 604-1...
Limit value indicator SINEAX VC 603 type 603-1...
Measuring transducer SIRAX V644 type 644-6...

(5) Manufacturer: Camille Bauer AG

(6) Address: Aargauerstrasse 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 97-27213.

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

EN 50014:1997 **EN 50020:1994**

(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. Johannsmeyer
Regierungsdirektor

Braunschweig, 11.07.1997

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

(13) # S C H E D U L E

(14) ## EC-TYPE-EXAMINATION CERTIFICATE No. PTB 97 ATEX 2074 X

(15) Description of equipment

The measuring transducer resp. limit value indicator is used for the measurement and conversion of the input variables to a normalised output signal. Direct current, direct voltage, resistance and temperature are detected as measured variable by means of resistance thermometers and thermocouples.

The limit value indicator SINEAX VC603 type 603-1... is equipped with additional contact circuits.

The measuring transducer SIRAX V644 type 644-6... is only intended to be plugged on the associated apparatus rack or on the apparatus rack SIRAX BP 902 type 902-2... with EC-type-examination certificate PTB 97 ATEX 2113, manufactured by Camille Bauer AG.

The conditioning to the different measured variables is carried out through a serial interface of an IBM AT or a compatible computer and corresponding software. The computer shall be connected to the programming socket BR 1 on the front panel of the apparatus via a special programming adaptor type PRKAB 600 with EC-type-examination certificate PTB 97 ATEX 2082 U.

The maximum permissible ambient temperature of the measuring transducer SINEAX V604 of type 604-1... and of the limit value indicator VC603 of type 603-1... is 55 °C.
The maximum permissible ambient temperature of the measuring transducer SIRAX V644 of type 644-6... is 40 °C.

Electrical data

The indicated terminal clamps refer to the designs SINEAX V604 of type 604-1... and SINEAX VC603 of type 603-1... .
The indicated connections refer to the design SIRAX V644 of type 644-6...

Auxiliary power	**type 604-13... resp. type 603-13... resp. type 644-63...**		
(terminal clamps 10 and 5	direct voltage	24 - 60 V -15%/+33%	(U_M = 125 V) or
resp. connections 14 and 20)	alternating voltage	24 - 60 V ± 15%	(U_M = 253 V)
	resp.		
	type 604-14... resp. type 603-14... resp. type 644-64...		
	direct voltage	85 - 110 V -15%/+10%	(U_M = 125 V) or
	alternating voltage	85 - 230 V ± 10%	(U_M = 253 V)

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 2074 X

Measuring input circuit (terminal clamps 1,2,6,7,11 and 12) connections 1,2,3,4,5 and 6)	type of protection Intrinsic Safety EEx ia IIC/IIB resp. EEx ib IIC/IIB maximum values: U_o = 11 V I_o = 3 mA P_o = 5 mW (linear output characteristic)

	IIC	resp. IIB
maximum permissible external inductance	1 H	1 H
maximum permissible external capacitance	1,97 µF	13,8 µF

or

Measuring input circuit (terminal clamps 11 and 12 or 11 and 7 or 11 and 6 or 11 and 2 resp. connections 5 and 6 or 5 and 4 or 5 and 3 or 5 and 2)	type of protection Intrinsic Safety EEx ia IIC/IIB resp. EEx ib IIC/IIB For configuration the not listed terminal clamps of the blue marked terminal block, i.e. the terminal clamps 1 and 2,6,7 resp. 2,6,12 resp. and 2,7,12 resp. and 6,7,12 resp. the connections 1 and 2,3,4 resp. and 2,3,6 resp. and 2,4,6 resp. and 3,4,6, may be interconnected to each other and to the indicated terminal clamps resp. connections. maximum values: U_o = 6 V I_o = 3 mA P_o = 5 mW (linear output characteristic)

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

resp.

(terminal clamps 11 and 2 or 11 and 12 or 11 and 7 resp. connections 5 and 2 or 5 and 6 or 5 and 4)	only for connection to certified intrinsically safe circuits with the following maximum values: U_i = 30 V The effective internal inductance is negligibly small. The effective internal capacitance is C_i = 6 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	27 mA	40 mH	262 nF	150 mH	1600 nF
19 V	27 mA	40 mH	112 nF	150 mH	850 nF
24 V	27 mA	40 mH	67 nF	150 mH	564 nF
30 V	27 mA	40 mH	42 nF	150 mH	370 nF
13 V	57 mA	10 mH	262 nF	40 mH	1600 nF
19 V	57 mA	10 mH	112 nF	40 mH	850 nF
24 V	57 mA	10 mH	67 nF	40 mH	564 nF
30 V	57 mA	10 mH	42 nF	40 mH	370 nF
13 V	77 mA	6 mH	262 nF	22 mH	1600 nF
19 V	77 mA	6 mH	112 nF	22 mH	850 nF
24 V	77 mA	6 mH	67 nF	22 mH	564 nF
30 V	77 mA	6 mH	42 nF	22 mH	370 nF
13 V	100 mA	3 mH	262 nF	12 mH	1600 nF
19 V	100 mA	3 mH	112 nF	12 mH	850 nF
24 V	100 mA	3 mH	67 nF	12 mH	564 nF
30 V	100 mA	3 mH	42 nF	12 mH	370 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 **non-linear (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	27 mA	5 mH	143 nF	10 mH	626 nF
19 V	27 mA	5 mH	57 nF	25 mH	319 nF
24 V	27 mA	2 mH	31 nF	25 mH	232 nF
30 V	27 mA	not permitted	not permitted	25 mH	141 nF
13 V	57 mA	2 mH	149 nF	10 mH	626 nF
19 V	57 mA	0,5 mH	38 nF	10 mH	292 nF
24 V	57 mA	not permitted	not permitted	10 mH	162 nF
13 V	77 mA	1 mH	139 nF	10 mH	475 nF
19 V	77 mA	not permitted	not permitted	5 mH	259 nF
24 V	77 mA	not permitted	not permitted	0,5 mH	61 nF
13 V	100 mA	0,5 mH	150 nF	5 mH	487 nF
19 V	100 mA	not permitted	not permitted	1 mH	232 nF

Output circuits (terminal clamps 4 and 9 resp. 3 and 8 resp. connections 26 and 28 resp. 30 and 32)	each U_{max} = 15 V; I_{max} = 25 mA maximum voltage U_M = 253 V

Output contacts (terminal clamps 13,14,15 resp. connections 27, 29, 31)	switching contacts alternating voltage up to 250 V, up to 5 A maximum voltage U_M = 253 V direct voltage up to 125 V, 0,24 A or up to 30 V, 1 A maximum voltage U_M = 125 V

additional contacts for monitoring limits only for variant SINEAX VC603 (alarm unit)

Output contacts (terminal clamps 18,19, 20 resp. 23, 24, 25 resp. 28, 29, 30)	switching contacts alternating voltage up to 250 V, up to 5A maximum voltage U_M = 253 V direct voltage up to 125 V, 0,24 A or up to 30 V, 1 A maximum voltage U_M = 125 V **only for variant SIRAX V644**
reference junction circuit (connections 7,8)	only for connection of passive devices

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

(16) Report PTB Ex 97-27213

(17) Special conditions for safe use

1. The measuring transducer resp. the limit value indicator shall be installed outside the explosion hazardous area only.
2. Only the programming adaptor PRKAB 600 with the EC-type examination certificate PTB 97 ATEX 2082 U may be connected to the programming socket BR1 on the front panel of the apparatus because the programming circuit is electrically connected to the intrinsically safe input circuit.

(18) Essential health and safety requirements

met by standards

Zertifizierungsstelle Explosionsschutz
By order

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig,11.07.1997

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