

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



(1) **CERTIFICATE OF CONFORMITY**
(2) **PTB No. Ex-97.D.2053 X**
(TRANSLATION)

- (3) This certificate is issued for the electrical apparatus
Temperature input module type CTI 21 Ex
- (4) manufactured by Hartmann & Braun GmbH & Co. KG
D-60487 Frankfurt
- (5) This electrical apparatus and any acceptable variation thereto is specified in the Schedule to this Certificate of Conformity.
- (6) The Physikalisch-Technische Bundesanstalt, being an Approved Certification Body in accordance with article 14 of the Council Directive of the European Communities of December 18, 1975 (76/117/EEC), confirms that this electrical apparatus has been found to comply with the harmonized European Standards

Electrical apparatus for potentially explosive atmospheres

EN 50 014:1977 + A1...A5 (VDE 0170/0171 Part 1/1.87) General Requirements
EN 50 020:1977 + A1...A5 (VDE 0170/0171 Part 7/4.92) Intrinsic Safety "i"

after the apparatus has been successfully subjected to pattern evaluation. The results of this pattern evaluation have been recorded in a confidential test report.

- (7) The apparatus marking shall include the code:
[EEx ib] IIC
- (8) The manufacturer shall be responsible for ensuring that any apparatus bearing the above marking conforms to the test documents specified in the Schedule to this certificate and that the routine verifications and tests prescribed have been carried out successfully.
- (9) The electrical apparatus may be marked with the Distinctive Community Mark according to Annex II to the Council Directive of February 6, 1979 (79/196/EEC). A facsimile of this mark is printed on this sheet of the certificate.

By order

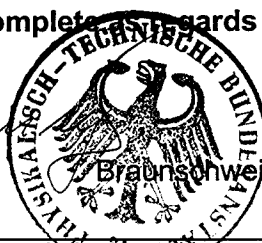
Braunschweig, 29.04.1997

(signature)

Dr.-Ing. Johannsmeyer
Oberregierungsrat

4 pages, correct and complete as regards content.
By order


Dr.-Ing. Johannsmeyer
Regierungsdirektor



Braunschweig, 18.06.1998

Test certificates without signature and official stamp shall not be valid.

The certificates may be circulated only without alteration.

Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt.
In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt

SCHEDULE

to Certificate of Conformity PTB No. Ex-97.D.2053 X

The temperature input module of type CTI 21 Ex is used for the transmission of analog and digital electrical signals between the intrinsically safe supply circuit and the non-intrinsically safe system circuit.

The analog sensing module (correct: temperature input module) consists of the plug-in module CTI 21 Ex, CS-terminal unit-Ex (plug-in terminal clamp) for single operation and the CS-terminal unit-Ex-redundant (with flat cable for connection of 2 plug-in modules to one circuit).

The permissible range of the ambient temperature is 0 °C up to +70 °C.

Electrical data

Power supply circuit20...33 V DC, approx. 6 W
(plug terminals)

Form B (64-pin).....Maximum voltage: $U_m = 65$ V DC

a5, a6, c5, c6Maximum voltage: $U_m = 253$ V AC
[Uv]

a1, a2, a3, c1, c2, c3, a31
(alternatively a4, c4)
[GND]

System circuit (P-bus)
(plug terminals)
Form B (64-pin)

a8 through a30, a32
c8 through c32

Ground terminal:
alternatively on the front plate by mounting screws

Supply circuittype of protection **CTI 21 Ex**
Intrinsic Safety EEx ib IIC/IIB

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terminals
terminals

for CS terminal unit-Ex for single operation:

for CS terminal unit-Ex-redundant for redundancy operation:

channel	terminal unit resp. plug-in connector:	terminal. resp. plug pin:
1	A	1,2
2	A	3,4
3	A	5,6
4	A	7,8
5	A	9,10
6	A	11,12
7	A	13,14
8	A	15,16
9	B	1,2
10	B	3,4
11	B	5,6
12	B	7,8
13	B	9,10
14	B	11,12
15	B	13,14
16	B	15,16
17	C	1,2
18	C	3,4
19	C	5,6
20	C	7,8
21	C	9,10
22	C	11,12
23	C	13,14
24	C	15,16
25	D	1,2
26	D	3,4
27	D	5,6
28	D	7,8
29	D	9,10
30	D	11,12
31	D	13,14
32	D	15,16

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CTI 21 Ex - single unit/redundancy operation:

		EEx ib	
		IIC	IIB
	U_o (single operation and redundancy operation)	$\leq 9,25 \text{ V}$	$\leq 9,25 \text{ V}$
	I_o (single operation)	$\leq 10 \text{ mA}$	$\leq 10 \text{ mA}$
	I_o (redundancy operation)	$\leq 20 \text{ mA}$	$\leq 20 \text{ mA}$
	P_o (single operation)	$\leq 45 \text{ mW}$	$\leq 45 \text{ mW}$
	P_o (redundancy operation)	$\leq 90 \text{ mW}$	$\leq 90 \text{ mW}$
effective internal capacitance	C_i (single operation)	0,4 μF	0,4 μF
	(redundancy operation)	0,8 μF	0,8 μF
maximum permissible external capacitance	C_o (single operation)	5,5 μF	44 μF
	(redundancy operation)	5,0 μF	44 μF
maximum permissible external inductance	L_o (single operation)	50 mH	25 mH
maximum permissible external inductance	L_o (redundancy operation)	50 mH	25 mH

The internal inductances are negligibly small.

Characteristics trapezoidal

The electrical ratings are valid for operation with CS-terminal unit-Ex and CS-terminal unit-Ex-redundant.

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

Test document

Certificate of conformity PTB No. Ex-96.D.2157 X

Special conditions

1. The temperature input module of type CTI 21 Ex shall be installed outside the explosion hazardous area.
2. The module shall be installed in such a way that at least a degree of protection of IP 20 according to IEC publication 529 is met.

By order

Braunschweig, 29.04.1997

(signature)

Dr.-Ing. Johannsmeyer
Oberregierungsrat

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