

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



(1) **CERTIFICATE OF CONFORMITY**
(2) **PTB No. Ex-96.D.2091 X**
(TRANSLATION)

- (3) This certificate is issued for the electrical apparatus
Binary sensing module type CBI 21 Ex resp. CBI 22 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, 02.07.1996

(signature)

Dr.-Ing. Johannsmeyer
Oberregierungsrat

6 pages, correct and complete as regards content.

By order


Dr.-Ing. Johannsmeyer, Braunschweig, 18.06.1998
Regierungsdirektor



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.

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SCHEDULE

to Certificate of Conformity PTB No. Ex-96.D.2091 X

The binary sensing module of type CBI 21 Ex resp. CBI 22 Ex is used for the transmission of digital electrical signals between the intrinsically safe supply circuit and the non-intrinsically safe system circuit.

The binary sensing module consists of the plug-in modules CBI 21 Ex or CBI 22 Ex, the 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. 10 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

CBI 21 Ex / CBI 22 Ex

Supply circuittype of protection Intrinsic Safety EEx ib IIC/IIB

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terminals for CS terminal unit-Ex for single operation:
terminals 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

effective internal capacitance: 10 nF
effective internal inductance: 200 μ H

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CBI 21 Ex "NAMUR":

		EEx ib	
		IIC	IIB
U _o (single operation and redundancy operation)		≤ 12 V	≤ 12 V
I _o (single operation)		≤ 20 mA	≤ 20 mA
I _o (redundancy operation)		≤ 40 mA	≤ 40 mA
P (single operation)		≤ 60 mW	≤ 60 mW
P (redundancy operation)		≤ 120 mW	≤ 120 mW
maximum permissible external capacitance	C _o (single operation and redundancy operation)	1,7 μF	8 μF
maximum permissible external inductance	L _o (single operation)	90 mH	330 mH
maximum permissible external inductance	L _o (redundancy operation)	23 mH	87 mH

CBI 22 Ex "CONTACT":

		EEx ib	
		IIC	IIB
U _o (single operation and redundancy operation)		≤ 22 V	≤ 22 V
I _o (single operation)		≤ 14 mA	≤ 14 mA
I _o (redundancy operation)		≤ 28 mA	≤ 28 mA
P (single operation)		≤ 77 mW	≤ 77 mW
P (redundancy operation)		≤ 154 mW	≤ 154 mW
maximum permissible external capacitance	C _o (single operation and redundancy operation)	150 nF	800 nF
maximum permissible external inductance	L _o (single operation)	175 mH	640 mH
maximum permissible external inductance	L _o (redundancy operation)	46 mH	170 mH

Characteristics: linear

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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 documents

signed on

1. Description (22 sheets)	02.05.1996
2. Drawing No.	
0764 446XP01	02.05.1996
0764 446XP02	02.05.1996
0764 446XP04	02.05.1996
0764 446XP07	02.05.1996
0764 446XP10	02.05.1996
0764 446XP11	02.05.1996
0764 446XP12	02.05.1996
0764 446XP13	02.05.1996
0764 446XP14	02.05.1996
0764 446XP15	02.05.1996
0764 446XP16	02.05.1996
0764 446XP17	02.05.1996
0764 446XP18	02.05.1996
0764 446XP19	02.05.1996
0764 507XP01	02.05.1996
0764 507XP02	02.05.1996
0764 507XP04	02.05.1996
0764 507XP07	02.05.1996
0764 507XP10	02.05.1996
0764 507XP11	02.05.1996
0764 507XP12	02.05.1996
0764 507XP13	02.05.1996
0764 507XP14	02.05.1996
0764 507XP15	02.05.1996
0764 507XP16	02.05.1996
0764 507XP17	02.05.1996
0764 507XP18	02.05.1996
0764 507XP19	02.05.1996
0764 446X sheet 1	10.06.1996
0764 446X sheet 2	10.06.1996
0764 507X sheet 1	10.06.1996
0764 507X sheet 2	10.06.1996
0788 731X sheet 1	02.05.1996
0788 731X sheet 2	02.05.1996
0788 732X sheet 1	02.05.1996
0788 732X sheet 2	02.05.1996

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Drawing No.		signed on
0632 593X		02.05.1996
0632 594X		02.05.1996
0489 524X sheet 1		10.06.1996
0489 524X sheet 2		10.06.1996
0489 524X sheet 3		10.06.1996
0489 524X sheet 4		10.06.1996
0489 524X sheet 5		10.06.1996
0489 524X sheet 6		10.06.1996
0745 202X		02.05.1996
0745 212X		02.05.1996
0764 437X		10.06.1996 (with 1 data sheet)
0764437 L1		10.06.1996
0764437 A		10.06.1996
0764520X		10.06.1996

Special conditions

1. The binary sensing module of type CBI 21 Ex resp. CBI 22 Ex shall be installed outside the explosion hazardous area.
2. The binary sensing 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, 02.07.1996

(signature)

Dr.-Ing. Johannsmeyer
Oberregierungsrat