



(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 98 ATEX 2183 X



(4) Equipment: Contrans I-supply unit V 17151-7.. and input isolator V17151-8..

(5) Manufacturer: Hartmann & Braun GmbH & Co. KG

(6) Address: D-65760 Eschborn

(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 98-28371.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50 014:1997 EN 50 020:1994

(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, November 23, 1998

(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 98 ATEX 2183 X

(15) Description of equipment

The Contrans I-supply unit type V17151-7.. is used to supply 2-wire measuring transducers (passive sensors), with transmission of analog and digital electrical signals (FSK communication). The Contrans I-input isolator type V17151-8.. is used to connect certified intrinsically safe circuits (active sensors), with transmission of analog and digital electrical signals (FSK communication).

The supply unit resp. the input isolator are manufactured in one and two channel design.

The maximum permissible ambient temperature is +60 °C.

Types of construction of the supply unit:

V17151-72.	one channel
V17151-74.	two channel
V17151-75.	1 X supply circuit 2 X output circuit

Types of construction of the input isolator:

V17151-82.	one channel
V17151-84.	two channel

Electrical Data

Power supply circuit

Supply unit type V17151-7.. (terminals 1(+) and 2(-); on module: terminal pins 1(+) and 2(-))	19.2...30 V DC, approx. 3.1 W Maximum voltage $U_m = 60$ V
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Input isolator type V17151-8.. (terminals 1(+) and 2(-); on module: terminal pins 1(+) and 2 (-))	19.2...30 V DC, approx. 1.9 W Maximum voltage $U_m = 60$ V
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Output circuits

Analog output circuit 1 (terminals 4(+) and 5 (-); on module: terminal pins 5 (+) and 6 (-); alternatively with test socket)	up to 12 V, up to 20 mA Maximum voltage $U_m = 60$ V
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SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 98 ATEX 2183 X

Analog output circuit 2
(terminals 3(+) and 6(-);
on module: terminal pins 9(+) and 10 (-))

up to: 12 V, up to: 20 mA
Maximum voltage $U_m = 60$ V

Interface circuits

FSK-Interface 1
(terminals 7 and 8;
on module: terminal pins 3 and 4;
alternatively with test socket)

up to +/- 3 V
Maximum voltage $U_m = 60$ V

FSK-Interface 2
(terminals 9 and 10;
on module: terminal pins 7 and 8;
alternatively with test socket)

up to +/- 3 V
Maximum voltage $U_m = 60$ V

Alternatively, interface circuits FSK-interface 1 and FSK-interface 2 may not apply.

Intrinsically safe input circuits

Supply unit type V17151-7..
Measuring transducer supply circuits

type of protection Intrinsic Safety
EEx ia IIC/IIB resp. EEx ib IIC/IIB

(Channel 1:
terminals 14 (+) and 15 (-);
on module: terminal pins 5(+) and 6 (-)

Maximum values per circuit:

$U_o = 26.3$ V
 $I_o = 93$ mA
 $P_o = 610$ mW
linear characteristic

Channel 2:
Terminals 13(+) and 16 (-);
on module: terminal pins 2(+) and 3(-))

$C_i \approx 0$
 $L_i \approx 0$

The maximum values of external capacitance and inductance of a measuring transducer supply circuit are shown in the table below.

EEx	ia IIC	ia IIB	ib IIC	ib IIB
C_o	97 nF	740 nF	97 nF	740 nF
L_o	4.1 mH	16.5 mH	4.1 mH	16.5 mH

Input isolator type V17151-8..
Input circuits

type of protection Intrinsic Safety
EEx ia IIC/IIB resp. EEx ib IIC/IIB

(Channel 1:
terminals 14 (+) and 15 (-);
on module: terminal pins 5 (+) and 6 (-)

Maximum values per circuit:

$U_o = 2.9 \text{ V}$
 $I_o = 30.5 \text{ mA}$
 $P_o = 22.1 \text{ mW}$
linear characteristic

Channel 2:
terminals 13 (+) and 16 (-)
on module: terminal pins 2(+) and 3(-)

$C_i \approx 0$
 $L_i \approx 0$

For connection to an active, intrinsically safe sensor with linear output characteristic

The maximum permissible values of external capacitance and inductance of an input circuit, dependant on the maximum values of the connected active intrinsically safe sensor circuit, are shown in the following table:

Maximum values of connected sensors (linear characteristic)		EEx ia resp. ib IIB		EEx ia resp. ib IIC	
U_i	I_i	L_o	C_o	L_o	C_o
2 V	61.4 mA	15 mH	100 μ F	4 mH	100 μ F
5 V	61.4 mA	15 mH	100 μ F	4 mH	8.4 μ F
10 V	61.4 mA	15 mH	6.2 μ F	4 mH	1 μ F
15 V	61.4 mA	15 mH	1.78 μ F	4 mH	309 nF
20 V	61.4 mA	15 mH	1.03 μ F	4 mH	143 nF
22 V	61.4 mA	15 mH	850 nF	4 mH	112 nF

for connection to an active, intrinsically safe sensor with rectangular or trapezoidal output characteristic

The maximum permissible values for external capacitance and inductance of an input circuit, dependant on the maximum values of the connected, active, intrinsically safe sensor circuit are shown in the following table.

Maximum values for connected sensors (rectangular/trapezoidal characteristic)		EEx ia resp. ib IIB		EEx ia resp. ib IIC	
U_i	I_i	L_o	C_o	L_o	C_o
2 V	61.4 mA	10 mH	2 μ F	2 mH	2 μ F
5 V	61.4 mA	10 mH	2 μ F	2 mH	1 μ F
10 V	61.4 mA	5 mH	1 μ F	2 mH	300 nF
15 V	61.4 mA	1 mH	600 nF	1 mH	120 nF
20 V	49 mA	1 mH	300 nF	0.5 mH	60 nF
20 V	61.4 mA	1 mH	300 nF	-	-
25 V	61.4 mA	1 mH	120 nF	-	-
30 V	50 mA	5 mH	80 nF	-	-

The intrinsically safe measuring transducer supply circuits of the supply unit V17151-7.. are safely, electrically isolated from all other circuits up to a peak value of the nominal voltage of 375 V. The intrinsically safe measuring transducer supply circuits of the supply unit V17151-7.. are safely electrically isolated from each other up to a peak value of the nominal voltage of 60 V (exception: V171151-750). The intrinsically safe input circuits of the input isolator V17151-8.. are safely, electrically isolated from all other circuits up to a peak value of 375 V. The intrinsically safe input circuits of the input isolator V17151-8 are safely electrically isolated from each other up to a peak value of the nominal voltage of 60 V.

(16) Report PTB Ex 98-28371 consisting of 7 pages

(17) Special conditions for safe use

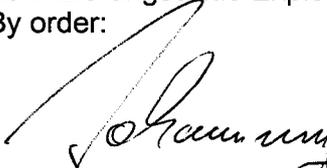
The connecting parts of the Contrans I-supply unit type V17151-7.., resp. the Contrans I-input isolator type V17151-8.. shall be installed in such a way that the minimum degree of protection of IP 20, according to IEC publication 60529:1989 is met.

(18) Essential health and safety requirements

Met by the standards mentioned above

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, November 23, 1998

1. SUPPLEMENT

according to Directive 94/9/EC Annex III letter 6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 98 ATEX 2183 X

(Translation)

Equipment: Contrans I-supply unit type V17151-7.. and input isolator type V17151-8..
as well as isolation amplifier type V17153-8..

Marking:  II (1) G [EEx ia] IIC

Manufacturer: Hartmann & Braun GmbH & Co. KG

Address: D-65760 Eschborn

Description of supplements and modifications

The EC-type-examination certificate PTB 98 ATEX 2183 X for the Contrans I-supply unit type V17151-7.. and the Contrans I-input isolator type V17151-8.. will be extended for the Contrans I-isolation amplifier type V17153-8.. .

For the Contrans I-supply unit type V17151-7.. and for the input isolator type V17151-8.. the terminal 6 (pin 10) and 2 (pin 2) may in future also be interconnected on the PCB.

The Contrans I-isolation amplifier type V17153-8.. is used for the connection to certified intrinsically safe circuits and for the transmission of DC- and AC signals (analog signals and FSK-communication). It guarantees the electrical isolation between the intrinsically safe output circuits and the non-intrinsically safe input circuits resp. FSK-communication circuits as well as the supply circuit.

The maximum permissible ambient temperature for the Contrans I-isolation amplifier type V17153-8.. is +60 °C.

Types of construction of the isolation amplifier

V17153-81.	single channel
V17153-82.	single channel, with FSK-communication
V17153-83.	dual channel
V17153-84.	dual channel, with FSK-communication

Braunschweig und Berlin

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 98 ATEX 2183 X

The maximum permissible values for the external capacitance and inductance of one output circuit are shown in the following table.

EEx	ia IIC	ia IIB	ib IIC	ib IIB
C _o	97 nF	740 nF	97 nF	740 nF
L _o	4.1 mH	16.5 mH	4.1 mH	16.5 mH

The intrinsically safe output circuits of the Contrans I-isolation amplifier type V17153-8.. are safely electrically isolated from all other circuits up to a peak value of the nominal voltage of 375 V. The intrinsically safe output circuits are safely electrically isolated from each other up to a peak value of the nominal voltage of 60 V.

Special conditions

The "Special Condition" is also valid for the Contrans I-isolation amplifier type V17153-8.. as well as for the modified construction of the the Contrans I-supply unit type V17151-7.. and the Contrans I-input isolator Typ V17151-8.. without changes.

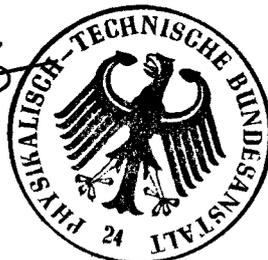
Test report: PTB Ex 99-28461

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, March 05, 1999

In the absence of Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

i.A. WAB



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EC-type-examination 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.