

Translation only valid with German certificate!**EC-Type Examination Certificate**

**Directive 94/9/EC –
Equipment and protective systems intended for use
in potentially explosive atmospheres**

(3) No. of EC-Type Examination Certificate

TÜV 00 ATEX 1595(4) **Equipment:** Transducer Type MK33-22.Ex0-HLi...(5) **Manufacturer:** Hans Turck GmbH & Co.KG.(6) **Address:** D-45472 Mülheim an der Ruhr, Witzlebenstraße 7

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(8) The certification body of TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, notified body no. 0032 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council 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 confidential test and assessment report Nr. 00 PX 16100.

(9) The Essential Health and Safety Requirements are 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. Further requirements of Directive 94/9/EC apply to the manufacture and placing on the market of this equipment.

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

**II (1) G/D [EEx ia] IIC**

TÜV Hannover/Sachsen Anhalt e.V. Hannover, dated 14.07.2000
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover
Störwald
Der Leiter



TÜV Hannover/Sachsen-Anhalt e.V. TÜV NORD

(13) Appendix to

(14) **EC-Type Examination Certificate** **TÜV 00 ATEX 1595**(15) Description

The transducer type MK33-22.Ex0-HLi... may be used to supply intrinsically safe 2-wire- or 3-wire measuring transducers in explosion hazardous areas and for galvanically isolated transmission of standard current signals into the non-explosive area.
The admissible ambient temperature ranges from -25 °C to +60°C.

Electrical parametersPower supply circuit

(terminals 11,12) $U \leq 35$ VDC; $P \leq 3,2$ W
 $U_m = 253$ VAC or 125 VDC

Output circuits

(terminals 7,10 and 8,9) $U \leq 15$ VDC, $I \leq 25$ mA
 $U_m = 253$ VAC or 125 VDC

Control circuits

(terminals 1,2,3 and 4,5,6)

Protection type „intrinsic safety“ EEx ia IIC. Maximum values can be taken from the following chart:

MK33-xxxEx0-HLi...				
Type xxx =	221	222	223	224
No load voltage U_0	21,9 V	19,8 V	17,7 V	21,9 V
Short circuit current I_0	99,1 mA	72,2 mA	104 mA	115 mA
Internal resistance	317 Ω	435 Ω	273 Ω	273 Ω
Characteristic curve	Trapezoidal curve			
C_0 for EEx ia IIC	59 nF	88 nF	210 nF	30 nF
L_0 for EEx ia IIC	0,36 mH	1,1 mH	0,37 mH	0,15 mH
C_0 for EEx ia IIB	260 nF	345 nF	330 nF	235 nF
L_0 for EEx ia IIB	5 mH	5 mH	5 mH	5 mH

or for connecting to active intrinsically safe transducers

(terminals 2,3 or 5,6)

maximum values: $U_i = 40$ V
 $P_i = 0,65$ W

The control circuits are galvanically isolated from each other up to 60 V and from all other circuits up to a peak value of the nominal voltage of 375 V.

(16) Test documents are listed in test report no. 00 PX 16100.

(17) Special conditions for safe use
not relevant(18) Basic safety and health requirements
fulfilled by application of above mentioned standards

**1. Supplement
to EC Type Examination Certificate**

TÜV 00 ATEX 1595

Manufacturer: Hans Turck GmbH & Co.KG.
Address: D-45427 Mülheim an der Ruhr

The transducer series MK33-22.Ex0-HL will be extended by type MK 33-11.Ex0-HLi and may be produced according to the documents listed in test report. The single channel-version is achieved by a partial assembly.

Electrical parameters

Power supply circuits

(terminals 11,12) $U \leq 35 \text{ VDC}; P \leq 3,2 \text{ W}$
 $U_m = 253 \text{ VAC or } 125 \text{ VDC}$

Output circuits

(terminals 7,10 and 8,9 or 7,10 for single channel) $U \leq 15 \text{ VDC}, I \leq 25 \text{ mA}$
 $U_m = 253 \text{ VAC or } 125 \text{ VDC}$

Control circuits

(terminals 1,2,3 and 4,5,6 and 1,2,3 for single channel).

Protection type „intrinsic safety“ EEx ia IIC. Maximum values can be taken from the following chart:

MK33-xxxEx0-HLi...				
Type xxx =	111 / 221	111 / 222	113 / 223	114 / 224
No load voltage U_0	21,9 V	19,8 V	17,7 V	21,9 V
Short circuit current I_0	99,1 mA	72,2 mA	104 mA	115 mA
Internal resistance	317 Ω	435 Ω	273 Ω	273 Ω
Characteristic curve	trapezoidal			
C_0 for EEx ia IIC	58 nF	87 nF	210 nF	29 nF
L_0 for EEx ia IIC	0,36 mH	1,1 mH	0,37 mH	0,15 mH
C_0 for EEx ia IIB	260 nF	345 nF	330 nF	235 nF
L_0 for EEx ia IIB	5 mH	5 mH	5 mH	5 mH

or
(terminals 2,3 or 5,6
or 2,3 with one channel)

for connection to active intrinsically safe transducers

maximum values:
 $U_i = 40 \text{ V}$
 $P_i = 0,65 \text{ W}$

1. Supplement to EC-Type Examination Certificate TÜV 00 ATEX 1595

The control circuits are galvanically isolated from each other up to 60 V and from all other circuits up to a peak value of the nominal voltage of 375 V.

All other data remain unchanged for this 1. Supplement.

- (16) Test documents are listed in test report no. 00 PX 23400.
- (17) Special conditions for safe use
not relevant
- (18) Basic safety and health requirements
no additional requirements - fulfilled by application of above mentioned standards

Certification body explosion protection

TÜV Hannover/Sachsen Anhalt e.V.

Hannover, dated 01.11.2000

TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Störwald
Der Leiter

2. Supplement
to EC Type Examination Certificate

TÜV 00 ATEX 1595



Hans Turck GmbH & Co. KG • D-45466 Mülheim an der Ruhr

Manufacturer: Hans Turck GmbH & Co.KG.

Address: D-45427 Mülheim an der Ruhr, Witzlebenstraße 7

The Transducer Type MK33-....Ex0-HLi... may be produced according to the documents listed in test report.

Electrical data and all other data remain unchanged for this 2. supplement.

16. Test documents are listed in test report No 01 PX 11110.

17. Special conditions for safe use

not relevant.

18. Basic safety and health requirements

no additional requirements – fulfilled by application of above mentioned standards

Ihr Zeichen, Ihre Nachricht vom	Unser Zeichen, unsere Nachricht vom	Durchwahl	Datum
	PMI/VSchw	-331	11.01.2001

Hinweis zur TÜV 00 ATEX 1595 – Information on TÜV 00 ATEX 1595

Für den "Nachweis der Eigensicherheit" gemäß EN 60079-14 ist in vielen Fällen die Angabe der Leistung nötig. Bei trapezförmigen Kennlinien wird diese Angabe jedoch von den Zulassungsstellen nicht in der EG-Baumusterprüfbescheinigung aufgeführt. In der Druckschrift "Zusammenschaltung von nichtlinearen und linearen eigensicheren Stromkreisen; PTB-ThEx-10" von Herrn U. Johannsmeyer und Martin Krämer (ISBN 3-89701-440-8; Ausgabe 1999) wird im Kapitel 2 die Berechnung verdeutlicht und bei Anwendung werden die aufgeführten Werte geliefert (1. Nachtrag).

In order to obtain the "Proof of intrinsic safety" acc. to EN 60079-14 power specifications are necessary in very many cases. If trapezoidal curves are concerned, the approving organisations do not list this specification in the EC type examination certificate. The publication "Interconnection of non-linear and linear intrinsically safe circuits; PTB-ThEx-10" by U. Johannsmeyer and Martin Krämer (ISBN 3-89701-440-8; Edition 1999), chapter 2, explains the calculation. When applying the formula, the following values are obtained (1. supplement):

MK33-111/221Ex0-HLi	$P_{max} = 542,57 \text{ mW}$
MK33-112/222Ex0-HLi	$P_{max} = 357,39 \text{ mW}$
MK33-113Ex0-HLi	$P_{max} = 460,20 \text{ mW}$
MK33-114Ex0-HLi	$P_{max} = 629,63 \text{ mW}$

TÜV Hannover/Sachsen Anhalt e.V.

Hannover, dated 10.05.2001

TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Störwald
Der Leiter

Hans Turck GmbH & Co KG

i.A.
V. Schwidden

i.V.
W. Stoll

TÜV Nord

Geschäftsführer: Ulrich Turck • Pers. haft. Ges.: Hans Turck Verw.-GmbH HRB 904 • Kommandit-Ges.: Amtsgericht Mülheim an der Ruhr HRA 1194
Postbank Essen 148 008 438 • BLZ 360 100 43 • Dresdner Bank 3 286 757 • BLZ 362 800 71
Deutsche Bank 1 628 007 • BLZ 362 700 48 • Stadtparkasse 300 101 224 • BLZ 362 500 00

**3. Supplement
to EC Type Examination Certificate**

TÜV 00 ATEX 1595

Manufacturer: Hans Turck GmbH & Co.KG.
Address: D-45427 Mülheim an der Ruhr, Witzlebenstraße 7

The type code of the isolating transducers has been changed.

Electrical data and all other specifications remain unchanged for this 3. supplement.

To provide a better overview, they are listed again with the new type code.

The isolating transducers, type IM 33-11(.)Ex-... and type IM 32-22 (.)Ex-... are designed to power intrinsically safe measuring transducers in explosion hazardous areas and to isolate and transfer standard current signals into the non-explosive area.

The isolating transducers are marked as follows: **II (1) G/D [EEx ia] IIC.**

The admissible ambient temperature ranges from -25 °C to +60°C.

Electrical parameters

Power supply circuit

(terminals 11, 12) $U \leq 35 \text{ VDC}; P \leq 3,2 \text{ W}$
 $U_m = 253 \text{ VAC or } 125 \text{ VDC}$

Output circuits

(terminals 7, 10 and 8, 9) $U \leq 15 \text{ VDC}, I \leq 25 \text{ mA}$
 $U_m = 253 \text{ VAC or } 125 \text{ VDC}$

Control circuits

(terminals 1, 2, 3 and 4, 5, 6 Protection type „intrinsic safety“ EEx ia IIC.
resp. 1, 2, 3 with one channel)

or

for connection to active intrinsically safe transducers

(terminals 1, 2, 3 or 5, 6
or 1, 2, 3 with one channel)

maximum values:
 $U_i = 40 \text{ V}$
 $P_i = 0,65 \text{ W}$

The control circuits are galvanically isolated from each other up to 60 V and from all other circuits up to a peak value of the nominal voltage of 375 V.

19. Test documents are listed in test report No 02 YEX 164085a.

20. Special conditions for safe use

not relevant.

21. Basic safety and health requirements

no additional requirements – fulfilled by application of above mentioned standards

TÜV Hannover/Sachsen Anhalt e.V.

Hannover, dated 01.07.2004

TÜV CERT-Zertifizierungsstelle

Am TÜV 1
D-30519 Hannover

Störwald
Der Leiter

IM33-xx(x)Ex-...				
Type xx(x) =	11 / 22	112 / 222	113/223	114 / 224
No load voltage U_0	21,9 V	19,8 V	17,7 V	21,9 V
Short circuit current I_0	99,1 mA	72,2 mA	104 mA	115 mA
Internal resistance	317 Ω	435 Ω	273 Ω	273 Ω
Characteristic curve	trapezoidal			
C_0 for EEx ia IIC	58 nF	87 nF	210 nF	29 nF
L_0 for EEx ia IIC	0,36 mH	1,1 mH	0,37 mH	0,15 mH
C_0 for EEx ia IIB	260 nF	345 nF	330 nF	235 nF
L_0 for EEx ia IIB	5 mH	5 mH	5 mH	5 mH

Translation

4. SUPPLEMENT to

EC-TYPE EXAMINATION CERTIFICATE No. TÜV 00 ATEX 1595

of the company Hans Turck GmbH & Co. KG
 Address: Witzlebenstraße 7
 D-45472 Mülheim an der Ruhr

In the future, the Transmitter Supply type IM33-***Ex-*** may also be manufactured according to the documents listed in the test report. The changes refer to the internal construction, the electrical data and the ambient temperature range.

The permissible ambient temperature range is -25°C ... +70°C.

Electrical data

Control circuits in type of protection intrinsic safety EEx ia IIC/IIB
 (Terminals The maximum values have to be taken from the following table:
 1, 2, 3 resp. 4, 5, 6)

Version xxx	IM33-***Ex-***			
	11, 12, 22 221 221...K39 221...K40	222 222...K39	223	224
U ₀	21,9 V	19,8 V	19,8 V	21,9 V
I ₀	95 mA	75 mA	90 mA	104 mA
R	331 Ω	419 Ω	316 Ω	302 Ω
Characteristic line	trapezoidal			
C ₀	EEx ia IIC 57 nF	73 nF	74 nF	58 nF
L ₀	EEx ia IIC 2,8 mH	5 mH	3,7 mH	2,3 mH
C ₀	EEx ia IIB 295 nF	315 nF	300 nF	275 nF
L ₀	EEx ia IIB 14 mH	23 mH	17 mH	11 mH

The connection of the control circuits to certified intrinsically safe circuits with the following maximum values is permissible:

(Terminals U_i = 40 V (device with 1 channel) resp.
 2, 3 resp. 5, 6) U_i = 30 V (device with 2 channels)
 P_i = 650 mW

The rules for the interconnection of intrinsically safe circuits have to be observed.

The intrinsically safe control circuits are safely galvanically separated from all non intrinsically safe circuits up to the peak crest value of the voltage of 375 V.
 The intrinsically safe control circuits are safely galvanically separated up to a sum of the voltages of 60 V.

4. Supplement to EC-Type Examination Certificate No. TÜV 00 ATEX 1595

All other details remain unchanged for this 4. supplement.

The Transmitter Supply type IM33-***Ex-*** according to this 4. supplement also meets the requirements of

EN 50 014:1997+A1+A2,
 EN 50 020:2002.

(16) The test documents are listed in the test report N° 04 YEX 551625.

(17) Special conditions for safe use
 none

(18) Essential Health and Safety Requirements
 no additional ones

TÜV NORD CERT GmbH & Co. KG
 Am TÜV 1
 D-30519 Hannover
 Tel.: 0511 986-1470
 Fax: 0511 986-2555

Hanover, 2005-01-17



Head of the
 Certification Body

TURCK

Konformitätserklärung Nr. 3006 M
Declaration of Conformity

Wir/We HANS TURCK GMBH & CO KG
WITZLEBENSTR. 7

D - 45472 MÜLHEIM A. D. RUHR

erklären in alleiniger Verantwortung, daß die Produkte
declare under our sole responsibility that the products

Transmitter-Speisetrenner
MK33-22.Ex0-HLi...
MK33-11.Ex0-HLi...
IM33...

auf die sich die Erklärung bezieht, mit den folgenden
Normen übereinstimmen
to which this declaration relates are in conformity with the following
standards.

EN 61326

und wo anwendbar / and where applicable


EN 50014
EN 50020

Gemäß den Bestimmungen der Richtlinie
Following the provisions of Directive (falls zutreffend/ if applicable)

EMV - Richtlinie / EMC Directive
89 / 336 / EWG 3. Mai 1989
Richtlinie ATEX 100a / Directive ATEX 100a
94 / 9 / EG 23. März 1994

Aussteller der EG-Baumusterbescheinigung:
TÜV Hannover / Sachsen-Anhalt e.V.
TÜV-CERT-Zertifizierungsstelle
Am TÜV 1, D-30519 Hannover
Kenn-Nr. 0032
Registriernummer: TÜV 00 ATEX 1595

Mülheim, den 03.06.02
Ort und Datum der Ausstellung /
Place and date of issue


(i.V. W. Stoll)
Name und Unterschrift
des Befugten / name and
signature of authorized person

Diese Konformitätserklärung entspricht
der Europäischen Norm EN 45014
"Allgemeine Kriterien für
Konformitätserklärungen von Anbietern".
Die Grundlage der Kriterien sind
internationale Dokumente, insbesondere
ISO/IEC-Leitfaden 22, 1982, "Information
on manufacturer's declaration of
conformity with standards or other
technical specifications".

This Declaration of Conformity is suitable
to the European Standard EN 45014
"General criteria for supplier's declaration
of conformity". The basis for the criteria
has been found in international
documentation, particularly in ISO/IEC-
Guide 22, 1982, "Information on
manufacturer's declaration of conformity
with standards or other technical
specifications".