

**Physikalisch-Technische Bundesanstalt**

**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

**PTB 00 ATEX 2033**

(4) **Equipment:** **Switching Amplifier Type MK 1.-...Ex0-...**

(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 Physikalisch Technische Bundesanstalt , notified body no. 0102 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 PTB Ex 00-20045.

(9) The Essential Health and Safety Requirements are 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. 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**

Certification body explosion protection

Braunschweig, dated 28.06.2000

Dr. Ing. U. Johannsmeyer  
Regierungsdirektor

**Physikalisch-Technische Bundesanstalt**

Appendix to

(14) **EC-Type Examination Certificate PTB 00 ATEX 2033**

(15) Description

The switching amplifier type MK 1.-...Ex0...is designed to power intrinsically safe sensors located in potentially explosive atmospheres and to evaluate the sensor signals.

The admissible ambient temperature ranges from –25°C up to 60°C

Electrical parameters

Power supply circuit

(Terminals 11, 12)

U ≤ 250 V AC; P ≤ 3 VA or U ≤ 35 V DC, P ≤ 3 W

Um = 250 V AC or 125 V DC

Relay outputs

(Terminals 7 ... 10)

Type MK 1.-...Ex0-R/...

U ≤ 250 VAC/120 VDC

I ≤ 2 A

P ≤ 500 VA or 60 W

Type MK 1.-...Ex0-T/...

U ≤ 30 V DC; I ≤ 100 mA

Type MK 1.-...Ex0-DZ/...

U ≤ 250 V AC or 375 V DC, I ≤ 130 mA

Control circuits

Protection type intrinsic safety EEx ia. IIC

(Terminals 1 ... 6)

maximum values: U<sub>o</sub> = 9,6 V

connection to 2 terminals

I<sub>o</sub> = 10,7 mA

connection to 3 or more terminals

ΣI<sub>o</sub> = 21,4 mA

Typical curve: linear

Values for maximum external capacitance and inductance see table below:

|  | EEx ia/ib IIC | EEx ia/ib |
|--|---------------|-----------|
| C <sub>o</sub> for any number of connections         | 3,6 μF        | 26 μF     |
| L <sub>o</sub> for connection to 2 terminals         | 300 mH        | 1000 mH   |
| L <sub>o</sub> for connection to 3 or more terminals | 70 mH         | 280 mH    |

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

- (16) Test report: No. PTB Ex 99-29138
- (17) Special conditions for safe use  
not necessary
- (18) Basic safety and health requirements  
fulfilled by use of above named standards

Certification body explosion protection

Braunschweig, dated 28.06.2000

Dr. Ing. U. Johannsmeyer  
Regierungsdirektor

Device: Switching Amplifier Type MK 1.-...Ex0-...

Marking:  II (1) G D [EEEx ia] IIC

Manufacturer: Hans Turck GmbH & Co. KG

Address: 45472 Mülheim  
Germany

Description of additions and modifications:

In future, the switching amplifier, type MK 1.-...Ex0-... may be manufactured according to the test documents listed in the test report. The changes concern the modification of the type code.

All other data remain unchanged for this 1. addition.

Test report: PTB Ex 02-22222

Certification Body Explosion Protection

Braunschweig, dated 6 November 2002

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor

## 2. Addition

according to directive 94/9/EC, Annex III, part 6  
to EC Type Examination Certificate PTB 00 ATEX 2033

Device: Switching Amplifier Type IM 1.-...Ex0-...

Marking:  $\text{Ex}$  II (1) G D [EEx ia] IIC

Manufacturer: Hans Turck GmbH & Co. KG

Address: 45472 Mülheim  
Germany

### Description of additions and modifications:

In future, the switching amplifier, type IM 1.-...ExO-... may be manufactured according to the test documents listed below.

The alterations concern the internal and external construction. .

The electrical data and all other definitions of the EC type examination certificate remain unchanged for this 2<sup>nd</sup> addition.

Test report: PTB Ex 03-23177

Certification Body Explosion Protection Braunschweig, dated / July 2003

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor

## Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



## 3. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2033

(Translation)

Equipment: Switching amplifier, type IM 1.-...Ex0-...

Marking:  $\text{Ex}$  II (1) G [Ex ia Ga] IIC and II (1) D [Ex ia Da] IIC

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstraße 7, 45472 Mülheim an der Ruhr, Germany

### Description of supplements and modifications

In the future the switching amplifier, type IM 1.-...Ex0-... may also be manufactured according to the documents listed in the assessment and test report.

The modifications concern the internal and external construction.

All other specifications of the EC-type examination certificate apply without changes.

The permissible range of the ambient temperature is -25 °C up to 60 °C.

### Electrical data

|                      |                |   |     |      |
|----------------------|----------------|---|-----|------|
| Supply circuit ..... | U              | ≤ | 250 | V AC |
| (terminals 11, 12)   | P              | ≤ | 3   | VA   |
|                      | U <sub>m</sub> | = | 250 | V AC |
|                      | or             |   |     |      |
|                      | U              | ≤ | 35  | V DC |
|                      | P              | ≤ | 3   | W    |
|                      | U <sub>m</sub> | = | 125 | V DC |

Output circuits  
(terminals 7...10)

|                         |   |   |     |      |    |
|-------------------------|---|---|-----|------|----|
| Type IM 1.-...Ex0-R/... | U | ≤ | 250 | V AC | or |
|                         |   |   | 120 | V DC |    |
|                         | I | ≤ | 2   | A    |    |
|                         | P | ≤ | 500 | VA   | or |
|                         |   |   | 60  | W    |    |

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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.

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3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2033

|                         |                 |
|-------------------------|-----------------|
| Type IM 1-...Ex0-T/...  | U ≤ 30 V DC     |
|                         | I ≤ 100 mA      |
| Type IM 1-...Ex0-DZ/... | U ≤ 250 V AC or |
|                         | 375 V DC        |
|                         | I ≤ 130 mA      |

Control circuits.....type of protection Intrinsic Safety Ex ia IIC  
(terminals 1...6) or Ex ia IIIC

Maximum values:

Connection to two terminals.....U<sub>o</sub> = 9.6 V  
I<sub>o</sub> = 10.7 mA

Connection to three or more terminals.....ΣI<sub>o</sub> = 21.4 mA

linear characteristic

L<sub>i</sub> negligibly low  
C<sub>i</sub> negligibly low

For relationship between type of protection and permissible maximum values for external reactances, reference is made to the table. Internal reactances are considered with these values.

| Ex ia  | IIC    |         | IIIC   |        |
|--|--------|---------|--------|--------|
| L <sub>o</sub> for any number of terminals               | 1 mH   | 5 mH    | 1 mH   | 5 mH   |
| C <sub>o</sub> for connection to two terminals           | 1.1 µF | 0.84 µF | 6.2 µF | 4.4 µF |
| C <sub>o</sub> for connection to three or more terminals | 1.1 µF | 0.8 µF  | 6.2 µF | 4.3 µF |

The control circuits are safely electrically isolated from all other circuits up to a peak value of the nominal voltage of 375 V.

Applied standards

EN 60079-0:2009                      EN 60079-11:2007                      EN 61241-11:2006

Assessment and test report:                      PTB Ex 11-20215

Zertifizierungssektor Explosionsschutz  
On behalf of PTB:

Dr.-Ing. U. Johannsmeyer  
Direktor und Professor



Braunschweig, December 1, 2011

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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.

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EU Declaration of Conformity No.:

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

Trennschaltverstärker: IM1-22Ex-R/24VDC, IM1-22Ex-R/230VAC,  
IM12-22Ex-R/24VDC und IM12-22Ex-R/230VAC

auf die sich die Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien durch Einhaltung der  
folgenden Normen genügen:  
to which this declaration relates are in conformity with the requirements of the following EU-directives by compliance with the following standards:

EMV – Richtlinie / EMC Directive 2014 / 30 / EU 26. Feb. 2014  
EN 61326-1:2013

Niederspannungsrichtlinie/ Low Voltage Directive 2014 / 35 / EU 26. Feb. 2014  
(für die Geräte mit Versorgungsspannung / for equipment with supply voltage : >50V AC bzw. >75V DC)  
EN 61010-1:2010

Richtlinie / Directive ATEX 2014 / 34 / EU 26. Feb. 2014  
EN 60079-0:2012 EN 60079-11:2012

Weitere Normen, Bemerkungen  
additional standards, remarks

Das Produkt stimmt mit den Anforderungen der Richtlinie 2014 / 34 / EU überein. Eine oder mehrere in der zugehörigen EG-Baumusterprüfbescheinigung genannten Normen wurden bereits durch neue Ausgaben ersetzt. Der Hersteller erklärt für das Produkt auch die Übereinstimmung mit den neuen Normenausgaben, da die veränderten Anforderungen der neuen Normenausgaben für dieses Produkt nicht relevant sind.

The product complies with the directive 2014 / 34 / EU. One or more norms mentioned in the respective EC type examination certificate were already replaced by new ones. The manufacturer declares that the product complies with the new valid norms, as the changed requirements mentioned there are not relevant for the product.

Die Niederspannungsrichtlinie ist nicht anwendbar bei Betrieb des Produktes im explosionsgefährdeten Bereich. In diesem Fall sind alle grundlegenden Zielsetzungen im Hinblick auf die Niederspannung von der Richtlinie 2014 / 34 / EU Anhang II Punkt 1.2.7 abgedeckt.

The low voltage directive is not applicable when the product is installed in the hazardous area. In this case all Low Voltage essential objectives are covered by the Directive 2014 / 34 / EU Annex II 1.2.7.

Zusätzliche Informationen:

Supplementary information:

Angewandtes ATEX-Konformitätsbewertungsverfahren / ATEX - conformity assessment procedure applied:  
Modul B + Modul D / E / module B + module D / E

EU-Baumusterprüfbescheinigung (Modul B) PTB 00 ATEX 2033/

EC-type examination certificate (module B)

ausgestellt von / issued by: Physikalisch Technische Bundesanstalt, Kenn-Nr. / number 0102  
Bundesallee 100, D-38116 Braunschweig

Zertifizierung des QS-Systems gemäß Modul D durch:

certification of the QS-system in accordance with module D by :

Physikalisch Technische Bundesanstalt, Kenn-Nr. / number 0102,  
Bundesallee 100, D-38116 Braunschweig

Mülheim, den 20.04.2016

i.V. Dr. M. Linde, Leiter Zulassungen / Manager Approvals

Ort und Datum der Ausstellung /  
Place and date of issue

Name, Funktion und Unterschrift des Befugten /  
Name, function and signature of authorized person