Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(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 00 ATEX 2193

(4) Equipment: Power supply unit, type PSD24Ex

(5) Manufacturer: Hans Turck GmbH + CO KG

(6) Address: Witzlebenstraße 7, 45472 Mülheim, Germany

(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 00-20432.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997+A1+A2 **EN 50019:1997** **EN 50020:1994** **EN 50028:1987**

(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, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

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

Ex II 2 G EEx m [ib] e IIC T4

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, February 26, 2001

3 pages, correct and complete as regards content.
By order:

Dr.-Ing. Johannsmeyer
Direktor und Professor

Braunschweig, June 30, 2005

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2193

(15) Description of equipment

The power supply unit, type PSD24Ex forms part of the explosion protected remote I/O-fieldbus system excom and shall be operated only within this system. A system description valid for all components of this system specifies the basic conditions for connection and operation.

As a central unit, the power supply unit supplies the entire fieldbus system with defined energy through the certified modude subrack assembly, type MT..., PTB 00 ATEX 2194 U. The power supply plug-in module is supplied through Ex-e inner-ply-multilayers implemented in the subrack. It generates a safely limited alternating output voltage for all other modules installed in the subrack, i.e. for max. 2 gateways and max. 16 system-modules. At most two identical power supply plug-in modules shall be operated in one subrack for redundancy. Like all other system-modules the power supply plug-in modules may be plugged and unplugged when being in operation in the area of zone 1.

With the exception of the input circuitry of the mains voltage supply, the power supply unit is completely designed to type of protection encapsulation "m" . Intrinsically safe auxiliary circuits inside the encapsulation permit that the power supply plug-in modules may be plugged during operation and enable the communication to the gateway and a second power supply unit.

Both, before unplugging and after plugging the power supply plug-in modules, it will be necessary to activate four release contacts by means of four obligatory fixing screws.

The type of protection of the equipment is: II 2 G EEx m [ib] e IIC T4
The permissible range of the ambient temperature is: -20 °C...+70 °C

Electrical data

Valid for all electrical circuits of the power supply unit: U_m = 60 V

Supply circuits

Power supply U_{in}

Multilayer lead-in wire via subrack unit (PTB 00 ATEX 2194 U)

Plug connector	type of protection Increased Safety EEx e
L+ : z24, b24, d24	U_{in} = 18...32 V DC (residual ripple ±10 %)
L- : z28, b28, d28	
PE : z32,b32,d32	not connected

AC-output voltage	U_{out}	effective only within the system excom – subrack unit MT... -
Plug connector z2, b2, d2 z6, b6, d6		$U_{out} \leq 20$ V (amplitude) 300...314 kHz (rectangular) $P_{out} < 75$ W (cf. test report)

The circuit requires an external current limitation which is guaranteed by the excom-system.

Multiple-spring wire plug	PA (equipotential bonding)

System-internal connections
effective only within the system excom – subrack unit MT... -

The safely limited AC-output voltage is safely electrically isolated from the supply circuit U_{in} and from all other circuits up to a voltage of 60 V.

(16) Test report PTB Ex 00-20432

(17) Special conditions for safe use

none

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, February 26, 2001

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2193

(Translation)

Equipment: Power supply unit excom, type PSD24Ex...

Marking: ⟨Ex⟩ **II 2 G EEx m [ib] e IIC T4**

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstr. 7
45472 Mülheim an der Ruhr, Germany

Description of supplements and modifications

The rated voltage in the power supply unit, type PSD24Ex has been reduced from 250 V to 60 V. Furthermore several assemblies have been revised to improve the operational reliability and to optimize the manufacture.

The power supply unit, type PSD24Ex remains part of the explosion protected remote I/O-fieldbus system excom and – also in the future – may only be operated within this system in combination with the subrack assembly, type MT..., PTB 00 ATEX 2194 U.

The type of protection of the equipment will continue to be: ⟨Ex⟩ **II 2 G EEx m [ib] e IIC T4**

Electrical data

no changes

Test report: PTB Ex 03-23507

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, January 20, 2004

1 page, correct and complete as regards content.
By order:

Dr.-Ing. Johannsmeyer
Direktor und Professor

Braunschweig, June 30, 2005

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

Sheet 1/1

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2193

(Translation)

Equipment: Power supply unit, type PSD24Ex

Marking: ⟨Ex⟩ **II 2 G EEx m e [ib] IIC T4**

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstr. 7
45472 Mülheim an der Ruhr, Germany

Description of supplements and modifications

The power supply unit, type PSD24Ex is equipped with a modified mounting facility and may in future also be manufactured according to the test documents listed in the test report.

The circuitry and the layout are adopted without changes.

The modified version of the apparatus will be kept in future under the type code **8/PSD24Ex .**

The electrical data and all further specifications are also valid for this 2nd supplement without changes.

Test report: PTB Ex 04-24222

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. H. Wehinger
Direktor und Professor

Braunschweig, July 9, 2004

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

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 2193

(Translation)

Equipment: Power supply unit, type PSD24Ex and type 8/PSD24Ex

Marking:  **II 2 G Ex e mb [ib Gb] IIC T4 Gb alternatively**
II 2 G Ex eb mb [ib] IIC T4

Manufacturer: Hans Turck GmbH & Co. KG

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

Description of supplements and modifications

The power supply unit, type PSD24Ex and type 8/PSD24Ex form part of the explosion protected remote I/O-fieldbus system excom and are intended for the application in hazardous areas of category 2 (EPL Gb).

As a central unit, the power supply unit supplies the entire fieldbus system with defined energy through the certified module subrack assembly, type MT..., PTB 00 ATEX 2194 U. The power supply plug-in cartridge is supplied through Ex-e inner-ply-multilayers implemented in the subrack. It generates a safely limited alternating output voltage for all other modules installed in the subrack, i.e. for max. 2 gateways and max. 16 I/O-modules. Two redundant power supply units may be operated in one subrack. Like all other system-modules the power supply modules may be plugged and unplugged during operation.

With the exception of the input circuitry of the mains voltage supply, the power supply unit is completely designed to type of protection encapsulation "m". Intrinsically safe auxiliary circuits inside the encapsulation permit that the power supply cartridge may be plugged during operation and enable the communication to the gateway and a second power supply unit.

Subject matter of this 3rd supplement is the revision and supplementation of the test documents for organizational reasons. Further modifications have not been made.

All specifications of the EC-type examination certificate and its previous supplements apply without changes.

The permissible ambient temperature range is -20 °C...+70 °C.

ZSEx10101e.dotm

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2193

Electrical data

Applicable to all electrical circuits of the power supply unit: U_m = 60 V

Power consumption: P_i = 75 W

I.) Supply circuits

Multilayer lead-in wire via subrack unit (PTB 00 ATEX 2194 U)

Power supply U_{in} ..... type of protection Increased Safety Ex e II

(plug connector:
L+ : z24, b24, d24 — U_{in} = 18 ... 32 V DC (residual ripple ±10 %)
L- : z28, b28, d28
PE : z32, b32, d32) — not connected

II.) System-internal connections

effective only within the subrack unit, type MT... -

AC-output voltage U_{out} .....system-internal circuit
(plug connector: z2, b2, d2, z6, b6, d6) without external connection facilities

An external current limitation required for this circuit is provided by the Excom system.

The intrinsically safe output voltage U_{out} is safely electrically isolated from the power supply U_{in} and all other circuits up to a voltage of 60 V.

Multiple-spring wire plug .....PA (equipotential bonding)

Release circuit for mechanical .....type of protection Intrinsic Safety Ex ib IIC
locking .....system-internal circuits
(plug connector: z16, d16) without external connection facilities

The following system connections are electrically interconnected.

Interfacing between power supply units .....system-internal circuits
without external connection facilities

Clock out — type of protection Intrinsic Safety Ex ib IIC
(plug connector: z14,

Ground (Ex)
(plug connector: z12)

Clock in .....type of protection Intrinsic Safety Ex ib IIC
(plug connector: d14)

Ground (Ex)
(plug connector: z12)

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2193

Gateway connection

Power (plug connector: d12)	type of protection Intrinsic Safety Ex ib IIC system-internal circuit without external connection facilities
Ground (Ex) (plug connector: z12)	

Applied standards

EN 60079-0:2009 **EN 60079-7:2007** **EN 60079-11:2012** **EN 60079-18:2009**

Test report: PTB Ex 12-22161

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, December 13, 2012

Dr.-Ing. U. Johannsmeyer
Direktor und Professor