IBExU Institut für Sicherheitstechnik GmbH
An-Institut der TU Bergakademie Freiberg

[1] # EC-TYPE EXAMINATION CERTIFICATE

according to Directive 94/9/EC, Annex III

(Translation)

[2] Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres, Directive 94/9/EC

[3] EC-Type Examination Certificate Number: **IBExU12ATEX1040**

[4] Equipment: **Pressure and temperature switches**
Type Ex-* und *-513, -563, -574, -575, -576, -577, -326 and -327

[5] Manufacturer: Honeywell GmbH
Fema Regelgeräte

[6] Address: Böblinger Str. 17
71101 Schönaich, Germany

[7] The design of the equipment mentioned under [4] and any acceptable variation thereto are specified in the schedule to this EC-Type Examination Certificate.

[8] IBExU Institut für Sicherheitstechnik GmbH, NOTIFIED BODY number 0637 in accordance with article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that the under [4] mentioned equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The test results are recorded in the test report IB-11-3-226 of 11 December 2012.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2009, EN 60079-1:2007 EN 60079-7:2007, EN 60079-11:2012 and EN 60079-31:2009.

[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 under [17] in the schedule to this EC-Type Examination Certificate.

[11] This EC-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this directive apply to the manufacture and supply of this equipment.

[12] The marking of the equipment mentioned in [4] shall include the following:

Type Ex-* **II 2G Ex d e IIC T6 Gb** and **II 1/2D Ex ta/tb IIIC T80 °C Da/Db**
$-20\ °C \le T_a \le +60\ °C$

Type Ex-TRM* **II 2G Ex d e IIC T6 Gb** and **II 2D Ex tb IIIC T80 °C Db**
$-20\ °C \le T_a \le +60\ °C$

Type *-513, -563, -574, -575, -576, -577, -326 and -327
II 1/2G Ex ia IIC T6 Ga/Gb and **II 1/2D Ex ia IIIC T80 °C**
$-25\ °C \le T_a \le +60\ °C$

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Authorised for certifications Explosion protection
By order

(Dr. Wagner)

Seal (ID no. 0637)

Freiberg, 11 December 2012

Certificates without signature and seal are not valid.
Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Schedule

[13] **Schedule**

[14] **to the EC-TYPE EXAMINATION CERTIFICATE IBExU12ATEX1040**

[15] **Description of equipment**

The pressure and temperature switches type Ex-* consist of a body in the increased safety protection, or protection by enclosure in the separately approved flameproof switches and connectors are built in. The devices are designed for use in hazardous areas requiring Category 2G or 2D equipment, provided. The process connection meets the requirements for 1D- equipment.

The pressure and temperature switches type * -513, -563, -574, -575, -576, -577, -326 and -327 provide intrinsically safe equipment represents. Using "ia" circuits, the devices meet the requirements of the process connection to 1G and 1D resources. The devices are mounted in zones 1, 2, 21 and 22.

Type extent Ex d, Ex e and Ex-t pressure switch

Type	pressure
Ex-DCM	...
Ex-DDCM	...
Ex-DGM	...
Ex-DNM	...
Ex-DNS	...
Ex-DWR	...
Ex-VCM	...
Ex-VNM	...
Ex-VNS	...

Type extent Ex d, Ex e and Ex-t thermostats

Type	temperature	remarks
Ex-TAM	...	with protection tube zone 20
Ex-TRM	...	room thermostat, zone 1 and 21
Ex-TX	...	with protection tube zone 20
Ex-TXB	...	with protection tube zone 20

Technical Data

Ambient temperature range. -20 °C to +60 °C
Degree of protection: IP65

Electrical Data

Rated voltage U_e ≤ 250 V
Rated current I_e max. 3 A AC, cos Phi ≥ 0.9
max. 0.1 A DC

Type extent Ex-i pressure switches

Type	pressure	ZF	ZF	ZF	ZF	ZF	ZF	ZF	ZF
DCM	...			513	563	574	575	576	577
DDCM	...			513	563	574	575	576	577
DGM	...			513	563	574	575	576	577
DNM	...			513	563	574	575	576	577
DNS	...			513	563	574	575	576	577
DWAM	...			513	563			576	577
DWR	...			513	563	574	575	576	577
FD	...	326	327						
VCM	...			513	563	574	575	576	577
VNM	...			513	563	574	575	576	577
VNS	...			513	563	574	575	576	577

Typumfang Ex-i Thermostate

Type	temperature	ZF	ZF	ZF	ZF	ZF	ZF	ZF	ZF
TAM	...			513	563				
TRM	...			513	563				
TX	...			513	563				
TXB	...			513	563				

ZF-declaration:

...-326 Device with resistor combination (only FD model without locking)

...-327 Device with resistor combination (only FD model, with internal locking)

...-513 Device with gold contact micro switch without resistor combination

...-563* Device with gold contact micro switch with resistor combination

...-574* Micro switch with gold contacts and resistor combination
- Opens with falling pressure, without locking

...-575* Micro switch with silver contacts and resistor combination
- Opens the pressure decreases with internal locking

...-576* Micro switch with gold contacts and resistor combination
- Opens with increasing pressure without locking

...-577* Micro switch with silver contacts and resistor combination
- Opens with increasing pressure, with internal locking

* = Switching devices plastic coated

Technical Data

Ambient temperature range. -25 °C to +60 °C
Degree of protection: IP65

Electrical Data for devices without resistor combination (... -513 and -563 ...):

Supply circuit type of protection intrinsic safety Ex ia IIC

	U_i	24 V DC
	I_i	100 mA
effective internal capacitance	C_i	1 nF
effective internal inductance	L_i	100 µH

Electrical data for devices with resistance combination (... -326 and -327 ... and ... -574, ... -575, ... -576 and -577 ...):
Supply circuit type of protection intrinsic safety Ex ia IIC

	U_i	14 V DC
	R_i	1500 Ohm
effective internal capacitance	C_i	1 nF
effective internal inductance	L_i	100 µH

[16] **Test report**

The proof of explosion protection is explained in detail in the test report IB-11-3-226. The test documents are part of the test report and are listed there.

Summary of the test results:
The pressure and temperature switch type Ex-* fulfils the requirements of type of protection increased Safety in connection with flameproof switches for an electrical equipment of the Equipment Group II, Category 2G, Explosion Group IIC and protection by enclosures Category 1/2D or 2D, Explosion Group IIIC.

The pressure and temperature switches type *-513, -563, -574, -575, -576, -577, -326 und -327 fulfill the requirements of type of protection intrinsic Safety ‚ia' for an electrical equipment of the Equipment Group II, Category 1/2G, Explosion Group IIC and Category 1/2D Explosion Group IIIC.

[17] **Special conditions**
none

[18] **Essential Health and Safety Requirements**

Confirmed by compliance with standards (see [9]).

By order

Freiberg, 11 December 2012

(Dr. Wagner)