

EC Design Test Certificate

- (1)
- (2) Machines and protection systems for proper use in explosion-hazard zones - Directive 94/9/EC
- (3) EC Design Test Certificate Number:
PTB 97 ATEX 1079 X
- (4) Machine: Line Entrance, Type 07-920-.../... to 07-924-.../...
- (5) Manufacturer: BARTEC
Komponenten und Systeme GmbH
- (6) Address: D-97980 Bad Mergentheim
Germany
- (7) The design of this machine and the different permitted models are defined in the Annex to this Design Test Certificate.
- (8) The Federal German Institute of Physical Sciences and Engineering has been appointed as agency no. 0102. In this capacity the Agency hereby certifies in accordance with Article 9 of the Directive of the Council of the European Community of March 23, 1994 (94/9/EC) that the machine fulfils the basic safety and health requirements for the design and construction of machines and protective systems for proper use in explosion-hazard zones, as specified in Annex II of the Directive.

The results of the test are specified in the Confidential Test Report No. Ex 97-17086.

- (9) The basic safety and health requirements are met in conformity with
EN 50014:1997 **EN 50018:1994**
- (10) If the certificate number has an "X" after it, then this indicates that special conditions for the safe operation of the machine are detailed in the Annex to this Certificate.
- (11) This EC Design Test Certificate only refers to the design and construction of the defined machine as specified in Directive 94/9/EC. Further requirements of this Directive are applicable to the manufacturing and distribution of this machine.
- (12) The machine must be marked with the following details:
Ex II 2 G EEx d IIC T6 to T4

Certification Agency for Explosion Protection
p.p.

[signature]
Dr. Ing. U. Klausmeyer
Senior Executive Officer

Seal of the
Federal German
Institute of
Physical
Sciences and
Engineering - 24

Braunschweig,
November 12, 1997

Annex

(13) **EC Design Test Certificate PTB 97 ATEX 1079 X**

(14) Description of the Machine:

The Line Entrance Type 07-920-11.../... to Type 07-924-.../... is for the insertion of lines into pressure-proof housings

Technical Specifications

Rated voltage [*] U ₀ /U..... up to	300V/300V	300V/500V	450V/750V	
Rated cross section.....	0.2 mm ² ... 150 mm ²			
Number of cable leads	1 ... 25			
Type and size of thread.....	M10 x 1 ... M48 x 1.5			
	Thread types and sizes that do not comply with ISO standards are marked as such.			
Rated operating voltage at ...	0.2 mm ²	3.0 A	10 mm ²	50 A
(For multi-wire models, ambient	0.3 mm ²	4.5 A	16 mm ²	67 A
temperatures of 40°C and a permitted	0.35 mm ²	5.5 A	25 mm ²	90 A
line temperature for T6 of 80°C)	0.5 mm ²	7.5 A	35 mm ²	110 A
	0.75 mm ²	10.0 A	50 mm ²	140 A
	1.0 mm ²	12.0 A	70 mm ²	170 A
	1.5 mm ²	15.0 A	95 mm ²	205 A
	2.5 mm ²	21.0 A	120 mm ²	240 A
	4.0 mm ²	28.0 A	150 mm ²	275 A
	6.0 mm ²	36.0 A		
Temperature class.....	T6	T5	T4	
Ambient temperature..... from	-55°C	to 40°C	55°C	70°C
Max. operating temperature				
at the place where the Line				
Entrance is used under				
normal operation of the				
electrical equipment		Cast resin		110°C
		H07RN-F, H07RN-F		60°C
		Oilflex (unscreened)		70°C
		RADOX 125		120°C
		RADOX 155		150°C

When calculating the maximum permitted current of the lines, make sure you take the machine's own heat and the heat of the electrical equipment in the place of operation at the maximum permitted ambient temperature, while at the same time complying with the operating temperatures of the cast resin and the conduction qualities.

* Depending on line in use

Annex to the EC Design Test Certificate PTB 97 ATEX 1079 X

When calculating the maximum permitted line current, make sure you base it on the machine's own heat and the heat of the electrical equipment in the place of operation at the maximum permitted ambient temperature, while at the same time complying with the operating temperatures of the cast resin and the conduction qualities.

- (16) Test Report No. Ex 97-17086, consisting of a description (7 pages), a drawing (2 pages), an itemised list (1 page) and a report (22 pages).

This EC Design Test Certificate and all future amendments also count as amendments to the partial certificate PTB No. Ex 88.B.1031 U.

- (17) Special conditions

If Line Entrances with threads are screwed into threaded holes, then the holes must comply with the minimum requirements specified in EN 50 018, section 5.3 (Table 3).

The Line Entrances must be attached to electrical operating media in such a way that they cannot come loose or get twisted.

The wire cables of the Line Entrances must be inserted into housings that comply with a protection class as detailed in EN 50 014, section 1.2.

If you use any temperature allocations that differ from the ones specified in this Design Test Certificate, you need to define the operating conditions of the Line Entrance in the prototype test of the relevant electrical equipment.

The line quality must be selected in such a way that it meets the thermal and mechanical requirements in their area of operation.

Routine Check Test

The Line Entrance is a non-divisible piece of equipment, and the conditions of assembly have been documented, so that, because of the pressure-proof housing, according to EN 50 018, section 16.2 (13.4.4), no routine check test is required as stipulated in section 16.1.

- (18) Basic safety and health requirements

Not applicable

Certification Agency for Explosion Protection
p.p.
[signature]
Dr. Ing. U. Klausmeyer
Senior Executive Officer

Seal of the
Federal German
Institute of
Physical
Sciences and
Engineering – 24


Braunschweig,
November 12, 1997

1st SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

(Translation)

Equipment: Conductor bushing, types 07-920.-.../..... to 07-924.-.../.....
Marking:  II 2 G EEx d IIC T6 to T4
Manufacturer: BARTEC GmbH former BARTEC Componenten und Systeme GmbH
Address: Max-Eyth-Straße 16
97980 Bad Mergentheim, Germany

Description of supplements and modifications

The conductor bushing of type 07-92...-.../..... may also come as a "pressure-tight" version with modified internal design.

For the characteristics of this version, reference is made to the operating instructions.

The type code is extended to:

07-92...-.../... U

U = "pressure tight"

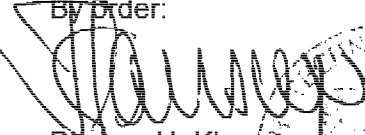
D = "pressure tight" with additional sealing

Test report: PTB Ex 03-13354

Zertifizierungsstelle Explosionsschutz

Braunschweig, November 14, 2003

By Order:


Dr.-Ing. U. Klausmeyer
Regierungsdirektor



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2nd SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

(Translation)

Equipment: Cable entry, types 07-920...-.../... to 07-924...-.../...

Marking: II 2 G EEx d IIC T6 to T4

Manufacturer: BARTEC GmbH

Address: Max-Eyth-Straße 16
97980 Bad Mergentheim, Germany

Description of supplements and modifications

The cable entry, types 07-920...-.../... to 07-924...-.../... may also be manufactured on the basis of the following modifications:

- Additional power cables will be used

Model NSSHÖU

Nominal voltage U_0/U up to 0.6/1.0 kV + 20 %
Ambient temperature range - 40 °C ... 40 °C

Model H05GG-F

Nominal voltage U_0/U up to 300/500 V
Ambient temperature range - 40 °C ... 70 °C

Max. operating temperatures at the location of the cable entry for normal operation of the electrical apparatus

NSSHÖU	90 °C
H05GG-F	110 °C

Test report: PTB Ex 04-14212

Zertifizierungsstelle Explosionsschutz

BY order:

Dr.-Ing. U. Klaus
Regierungsdirektor



Braunschweig, September 20, 2004

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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.

3rd SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

(Translation)

Equipment: Cable gland, type 07-920.-.../.... to 07-924.-.../....

Marking:  II 2G Ex d IIC T6 to T4

Manufacturer: BARTEC GmbH

Address: Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany

Description of supplements and modifications

The cable gland of the types 07-920.-.../.... to 07-924.-.../.... may also be manufactured with the following modifications:

The lower range of ambient temperatures has been extended to -60 °C.
(depending on the flexible cables used, the limits may be narrower)

Additional sleeve sizes and materials can be used.
Additional materials are stainless steel, grey cast iron, aluminium alloys (with Mg < 6 % by wt).

There are additional installation options (angled installation, cables with stripped insulation)

Additional types of flexible cables can be used.

Braunschweig und Berlin

3rd SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

Applied standards

EN 60079-0:2009, EN 60079-1:2007

Test report: PTB Ex 13-11289

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, September 2, 2013

(signature)

Dr.-Ing. U. Klausmeyer
Direktor und Professor

3 pages, correct and complete as regards content.

On behalf of PTB:



Dipl.-Phys. U. Völkel



Braunschweig, October 21, 2013

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4 SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

(Translation)

Equipment: Line entry 07-920*-****/**** to 07-924*-****/****

Marking:  II 2 G Ex d IIC T6, T5, T4 Gb resp.
 II 2 G Ex db IIC T6, T5, T4
 II 2 D Ex tb IIIC T80 °C, T95 °C, T110 °C Db resp.
 II 2 D Ex tb IIIC T80 °C, T95 °C, T110 °C

Manufacturer: BARTEC GmbH

Address: Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany

Description of supplements and modifications

Due to the extensive addition of useable hose lines and the resulting modifications of the technical data, the EC-type examination certificate and supplements 1st - 3rd are summarized in the issue of 4th supplement.

The line entry type 07-920*-****/**** to 07-924*-****/**** serves for the entry of cables into flameproof enclosures.

The type code (table 1) has been modified and extended.
The complete type code is subsequently listed.

Table 1: Type code

Type No	07	-	9	2	*	*	-	*	*	*	*	/	*	*	*	*
Key no.	A		B	C	D	E		F	G	H	I		J	K	L	M

Key	Code number for	Variations	Description
A,B,C	Line entry	07-92	
D	Sleeve design and kind of thread	0	screw thread, metric
		1	screw thread, differing to metric, e.g. NPT
		2	screw thread, differing to metric e.g. WWR

4 SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

Key	Code number for	Variations	Description
		3	screw thread, metric special types
		4	screw thread, differing to metric, e.g. Pg thread
E	Cable design	0	Special cables
		1	Rubber hose cable up to 1,140 V
		2	PVC- hose cable up to 1,000 V
		3	Rubber hose cable up to 1,000 V, increased temp. range
		4	Rubber hose o 500 V
		5	Rubber hose cable up to 500 V
		6	Rubber hose cable up to 750 V
		7	Hose cable up to 300 V for intrinsically safe circuits
		8	Hose cable with screen resp. braiding up to 1,000 V
F	Wire cross-section	A	Special cross-section between B to W (e.g. AWG)
		B	0.14 – 0.2 mm ²
		C	0.25 - 0.3 mm ²
		D	0.34 – 0.35 mm ²
		E	0.5 mm ²
		F	0.75 mm ²
		G	1 mm ²
		H	1.5 mm ²
		J	2.5 mm ²
		K	4 mm ²
		L	6 mm ²
		M	10 mm ²
		N	16 mm ²
		P	25 mm ²
		Q	35 mm ²
		R	50 mm ²
		S	70 mm ²
		T	95 mm ²
		U	120 mm ²
		V	150 mm ²
		W	185 mm ²
		Z	mixed
G, H	Design and number of wires at hose line	<p>Hose line with xx wires (which steps into the resin on sleeve side):</p> <p>xx:</p> <p>01 1 wire</p> <p>02 2 wires</p> <p>up to</p> <p>49 49 wires</p> <p>Hose line with yy wires (which steps into the resin on boss side):</p> <p>yy:</p> <p>51 1 wire</p> <p>52 2 wires</p> <p>up to</p> <p>99 49 wires</p> <p>Hose line with zz continuous wires:</p> <p>A1, A2 ... A9 1, 2 ...9 wires</p> <p>B1, B2 ... B9 11 – 19 wires</p> <p>C1, C2 ... C9 21 – 29 wires</p> <p>D1, D2 ... D9 31 – 39 wires</p> <p>E1, E2 ... E9 41 – 49 wires</p> <p>A0 10 wires</p> <p>B0 20 wires</p> <p>C0 30 wires</p> <p>D0 40 wires</p>	
I	Size of sleeve	1	M16x1
		2	M24x1.5
		3	M33x1.5
		4	M36x1.5
		5	M38x1.5
		6	M42x1.5
		7	M48x1.5
		8	M56x1.5
		D	M16x1.5
		E	M20x1.5
		F	M25x1.5
		G	M32x1.5
		L	M40x1.5
		R	M64x1.5
		S	M72x1.5
		g	special size

4 SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

Key	Code number for	Variations	Description
			<i>respective NPT-, WWR- and Pg-sizes</i>
K	Design (and Ex marking)	D E U V X Y	pressure-sealed, -0.9 to 80 bar (for GAS) pressure-sealed, -0.9 to 80 bar (for GAS & DUST) pressure-sealed, -0.5 to 6 bar (for GAS) pressure-sealed, -0.5 to 6 bar (for GAS & DUST) Standard (for GAS) Standard (for GAS & DUST)
J, L, M	Number or letter for characteristics without influence on the explosion protection		

The table 2 shows the rated current for cables with reference to the cross section at ambient temperatures of 30 °C. An interpolation to higher ambient temperatures acc. to table 3 is permitted.

For the determination of the maximum current carrying capacity for cables, their self-heating and heating of the electric equipment on site at maximum ambient temperature must be taken into account. Thereby the operation temperatures of the cast resin and the cable quality also have to be observed.

Table 2: Rated current at 30 °C ambient temperatures

Nominal cross section copper conductor	Rated current load of cable type A07RN-F resp. H07RN-F	Rated current load (remaining cable types)
[mm ²]	[A]	[A]
0.14	-	1.8
0.25	-	3.6
0.34	-	5.5
0.5	-	8.2
0.75	-	11
1	11	14
1.5	14	16
2.5	19	24
4	26	31
6	33	40
10	46	56
16	61	75
25	81	98
35	100	123
50	126	153
70	156	188
95	186	227
120	216	266
150	248	305
185	281	347

4 SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

Table 3: Conversion factors for deviating ambient temperatures

Ambient temperature	Permissible operating temperature of the cable				
	60 °C	70 °C	80 °C	90 °C	110 °C
[°C]					
10	1.29	1.22	1.18	1.00	1.00
15	1.22	1.17	1.14	1.00	1.00
20	1.15	1.12	1.10	1.00	1.00
25	1.08	1.06	1.05	1.00	1.00
30	1.00	1.00	1.00	1.00	1.00
35	0.91	0.94	0.95	1.00	1.00
40	0.82	0.87	0.89	1.00	1.00
45	0.71	0.79	0.84	1.00	1.00
50	0.58	0.71	0.77	1.00	1.00
55	0.41	0.61	0.71	0.94	1.00
60	-	0.50	0.63	0.87	1.00
65	-	0.35	0.55	0.79	1.00
70	-	-	0.45	0.71	1.00
75	-	-	0.32	0.61	1.00
80	-	-	-	0.50	1.00

The line entry is type tested up to a type test pressure of 48.6 bar, depending on the cable used.

Technical data:

Rated voltage ⁽¹⁾ :	max. 1140 V		
Rated current:	max. 347 A		
Type of current:	AC and DC		
Rated cross section area:	max. 185 mm ²		
Temperature class:	T6	T5	T4
Ambient Temperature ⁽¹⁾ :	up to 40 °C	up to 55 °C	up to 70 °C
Type of thread and dimension:	M16x1 up to M72x1.5 (respective for metric thread other types of thread e.g. NPT)		
Number of wires:	max. 49 (depending on 20 % boundary surface of compound)		
Static test pressure (type tested) ⁽¹⁾ :	30 bar – 48.6 bar		
Service temperature ⁽¹⁾ :	-60 °C ≤ T ≤ +110 °C		

4 SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 97 ATEX 1079 X

- (1) = Details depending on type:
- Rated voltage, ambient temperature range and service temperature range are dependent on used hose line
 - Test pressure of static overpressure test is dependent on lower service temperature limit which hose line is used

The temperature classes have been defined as a function of the self-heating at rated current and the ambient temperature.

Application limitations ⁽¹⁾ concerning service temperature and static test pressure with regard to used hose line are determined in manufacturer's document.

The maximum current carrying capacity of connecting wires shall be established on the basis of the self-heating rate and the heating rate of the enclosure at the place of installation, starting from the maximum permissible ambient temperature; due consideration shall also be given to the service temperatures of the cast resin and the hose line quality.

Special conditions for safe use:

- If line entries with threads are screwed into threaded holes, then the holes must comply with the minimum requirements specified in IEC 60079-1, section 5.3 (Table 3).
- The line entries must be attached to the electrical device in such a way that they cannot get lost or twisted.
- The hose line of the line entries must be inserted into enclosures that comply with a type of protection as detailed in IEC 60079-0 section 1.
- If temperature allocations that differ from the ones specified in this certificate are used, the operating conditions of the line entries are to be specified in the type test of the respective electrical equipment.
- The hose lines' quality must be selected in such way that it meets the thermal and mechanical requirements in their area of operation.

Applied standards

EN 60079-0:2012, EN 60079-1:2007, EN 60079-31:2014

Test report: PTB Ex 14-34291

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB

Braunschweig, May 12, 2015


Dr.-Ing. F. Lienesch
Regierungsdirektor



Sheet 5/5

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