

**Operation manual  
Heating Circuit  
DL../DM../DH../DU**



# CONTENTS

	<b>PAGE</b>
<b>MANUFACTURER</b>	<b>3</b>
<b>APPLICATION</b>	<b>3</b>
<b>CERTIFICATION &amp; LABELLING</b>	<b>3</b>
<b>TECHNICAL DATA</b>	<b>4</b>
<b>SAFETY ADVICES</b>	<b>4</b>
<b>TYPE CODE</b>	<b>5</b>
<b>ADVICE FOR INSTALLATION &amp; OPERATION</b>	<b>6</b>
<b>SERVICE &amp; MAINTENANCE</b>	<b>6</b>
<b>TEST REPORT</b>	<b>7</b>
<b>DECLARATION OF COMPLIANCE</b>	<b>8</b>
<b>NOTES</b>	<b>9</b>
<b>CONTACTS</b>	<b>10</b>

**RESERVATION:**

Technical data subject to change without notice. Changes, errors, and misprints may not be used as a basic for any claim for damages.

## MANUFACTURER

DIRAC INDUSTRIES S.R.O.  
K AUTOMOBILGE 585  
28002, KOLÍN - SENDRAŽICE

TEL.: +420 323 040 700  
EMAIL: INFO@DIRACINDUSTRIES.COM  
INTERNET: [WWW.DIRACINDUSTRIES.COM](http://WWW.DIRACINDUSTRIES.COM)

## NOTES FOR MANUAL

Working in hazardous areas safety of personnel and material depends on the adherence of all relevant safety rules. Persons who are responsible for installation and maintenance have got a special responsibility. Precondition is an exact knowledge of all actual rules and regulations. This manual summarizes all important safety rules and has to be read by all persons working with this product to be familiar with the handling. The manual must be kept over the complete life span of the product.

## MARKING

Important sections in this manual are marked with a symbol.



**DANGER**  
DANGER signs a risk which can result in death or severe injury if not avoided.



**WARNING**  
WARNING signs a risk which can result in death or severe injury if not avoided.



**CAUTION**  
CAUTION signs a risk which can result in injury if not avoided.



**ATTENTION / NOTE**  
ATTENTION / NOTE signs an action to prevent material damage.

## EX TERMINATION SYSTEMS FOR THE FOLLOWING HEATING CABLE TYPES:

DLT...2CT; DMT...2CT; DHT...2CT; DUT...2NT

## APPLICATION

Heating circuit type DL/DM/DH/DU... is used for electric trace heating on pipes, vessels, enclosures, electrical motors etc. to realize frost protection for sensible products & equipment and to maintain specific temperatures of these products or for anti-condensation.

The heating circuit type is factory assembled or can be assembled on building site.

## CERTIFICATION & LABELLING

**Manufacturer:** DIRAC Industries s.r.o.  
**Type:** D\_ \_ \_ 1- 2- \_ \_ /D  
**Certifications:** EPS 23 ATEX 1 227 X  
**Marking:**  II 2G Ex mb IIC T6/T5/T4/T3 Gb  
 II 2D Ex mb IIIC T85°C/T100°C/T135°C/T200°C Db



CE: 1026

Heating circuits assembled by DIRAC Industries´ will be labeled and delivered by DIRAC Industries´ with all specific data of the corresponding heating circuit. Heating circuits which are assembled by the installer on site must be labeled clearly by the installer using enclosed UV-resistant marker (Staedler Lumocolor) according to the following example. The label of the heating circuit has to be mounted visible on the power supply cable.

Only one of the following supply cables is permitted for the assembly of a heating circuit approved for use in hazardous areas:

For heating circuits DL/DM... -> **Radox125-3G1.5** and **Radox125-3G2.5**

For heating circuits DH/DU... -> **Quintex ALF 15** and **Quintex ALF 25**

**DIRAC Industries s.r.o**

K Automobilce 585,  
280 02 Kolín - Sendražice,  
Czech Republic

DIRAC Industries Ex Heating Circuit



Type: D\_\_ - \_\_\_ - \_\_\_ - \_\_\_ / \_\_\_

EPS 23 ATEX 1 227 X

⊕ II 2G Ex mb IIC T6/T5/T4/T3 Gb

⊕ II 2D Ex mb IIIC T85°C/T100°C/T135°C/T200°C Db

Circuit Length: \_\_, \_\_m -55°C ≤ Ta ≤ +180°C

Rated Voltage: \_\_\_V

Rated Power Output: \_\_\_W/m

SN: \_Number Year: 2023

1026



**TECHNICAL DATA**

Rated voltage:

U<sub>max</sub> 277 V AC

Ambient-/work piece temperature range:

DLT, DMT with crimp terminals:

CT-Outerjacket: -40°C to +85°C

DHT and DUT with crimp terminals: -65°C to +225°C(250°C)

according to DIRAC Industries' data sheets heating cable

Max. length of heating circuit:

**FOR ADDITIONAL INFORMATION PLEASE READ EC-TYPE EXAMINATION CERTIFICATE**

**SAFETY ADVICES**

Heating circuits are only allowed to be used for permitted applications. Ex-protection of heating circuits type: D... is only guaranteed in original condition. Electrical heating circuits are only permitted to be used/operated if undamaged.

Ex protection is not or even no more granted under the following conditions:

- Damaged or carved isolation layers of supply cable or heating cable.
- Power supply cable or end termination is carved or cracked.
- The sealing compound of the shrink tubing (hot-melt adhesive) does not adhere to the outer jacket of the heating tape or to the insulation of the connection cable.
- Heat shrink is visually damaged due to overheating during assembling.

**TYPE CODE**

D - - - - / - - - -

L1 = Connection Heating Band DLT  
 M1 = Connection Heating Band DMT  
 H1 = Connection Heating Band DHT  
 U1 = Connection Heating Band DUT

P = Power in W/m at 10°C  
 e.g., 15 = 15 W/m

Supply voltage:  
 1= 115V  
 2= 230V  
 3= 24V

Connection cable:  
 1 = 3 G 1,5mm<sup>2</sup> Radox  
 2 = 3 G 2,5 mm<sup>2</sup> Radox  
 5 = 3 G 1,5mm<sup>2</sup> FEP  
 6 = 3 G 2,5mm<sup>2</sup> FEP

Heating band ending:  
 1 = Dual shrink tube  
 2 = Polyolefin endcap  
 3 = Silicon-Boot HTL  
 4 = Endcap Stripfree HTL

Heating circuit-length in m: e.g.,  
 001 = 1m      DM1= 0,1m  
 010 = 10m     DM5 = 0,5m  
 200 = 200m    DM9 = 0,9m

Marking without influence on explosion protection.

## ADVICES FOR INSTALLATION & OPERATION

The following DIRAC Industries' installation instructions must be observed for the correct assembly of the heating circuits:

- Type DL/DM... -> „Connection technology ETK3P-HSEx”
- Type DH/DU... -> „Connection technology ETK3P-HSEx “

A test report must be prepared for each heating circuit and attached to the heating circuit documentation.

The minimum and maximum ambient temperatures of the connection technology must be observed.

## SERVICE & MAINTENANCE

Maintenance and servicing work on the product may only be carried out by trained specialist personnel.

Before maintenance and/or servicing, the specified safety regulations must be observed. Only original parts from the manufacturer may be used for maintenance and servicing.

Damaged heating circuits must always be replaced immediately.

The insulation test must be carried out as a routine test in accordance with EN 60079-18, 9.2.

Supplementary information can be found in the EC type-examination certificate.

**TEST REPORT**

**HEATING CIRCUIT TEST REPORT**

**General information**

	Customer	Constructor	Project no.:
Adress			

Order no.:	Heating Circuit Batch: _____
------------	------------------------------

Ex- design	Zone:	Temperature class: T ____
------------	-------	---------------------------

**Technical data and testing**

Circuit number:	①	②	③
Heating tape group:	<input type="checkbox"/> Self limiting		<input type="checkbox"/> Constant wattage
Total sum of heating circuit:	_____ pcs.		
Part no. Of heating cable			
Length of teating circuit	_____ m	_____ m	_____ m
Nominal output total	_____ W	_____ W	_____ W
Type of termination			
Type of supply cable			
Adjustment / Controller / Limiter	controller ____°C limiter ____°C	controller ____°C limiter ____°C	controller ____°C limiter ____°C
Supply voltage	<input type="checkbox"/> 12/24V <input type="checkbox"/> 230V AC <input type="checkbox"/> 400V AC <input type="checkbox"/> ____V	<input type="checkbox"/> 12/24V <input type="checkbox"/> 230V AC <input type="checkbox"/> 400V AC <input type="checkbox"/> ____V	<input type="checkbox"/> 12/24V <input type="checkbox"/> 230V AC <input type="checkbox"/> 400V AC <input type="checkbox"/> ____V
Visual Inspection	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Function test	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
High voltage test:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Insulation measurement	_____ kv ≥ _____MΩ (min. 50MΩ)		
Testing date			
Signature examiner			

**To be completed by customer or constructor**

Fusing	_____ A( C-Characteristic)
RCD Residual current device	<input type="checkbox"/> Yes <input type="checkbox"/> No _____ mA
Place / Date	
Signature Constructor	
Signature Customer	

DIRAC Industries NW/SA  
J.B. Bosmansstraat 2  
B-1600 Sint-Pieters-Leeuw  
+32 (0)2 376 51 29  
+ 32 (0)2 376 16 95

DIRAC Industries s.r.o  
Prumyslova zona Kolín-Ovcary  
K.Automobilce 585,  
280 02 Kolín, Czech Republic  
+ 420 323 040 700

DIRAC Industries Kft.  
Bogoly utca 12. 2120 Dunakeszi  
Hungary  
+ 36 30 422 2035

DIRAC Industries Pvt Ltd.  
509, Goodwill Infinity, Plot E/3A  
Sector 12, Kharghar, Navi Mumbai  
Maharashtra, India - 410210  
+ 91 83907 44712

**DECLARATION OF CONFORMITY**

**DIRAC INDUSTRIES S.R.O., K AUTOMOBILCE 585, 28002, KOLÍN - SENDRAŽICE**

# DECLARATION OF CONFORMITY

**THIS DECLARATION OF CONFORMITY IS ISSUED BY THE MANUFACTURER:**

**Bussines name:** DIRAC Industries s.r.o.  
**Seat:** K Automobilce 585, 28002, Kolin – Sendražice  
**CIN:** 27956628  
**VATIN:** CZ27956628

**FOR THE PRODUCTS:**

Termination Kit

**Notified body:** Bureau Veritas

**TYPE DESIGNATION:**

D \_ \_ \_ \_ \_ / \_ \_ \_ \_ \_

**THE PRODUCT CORRESPONDS TO:**

EN IEC 60079-0:2018	EPS 23 ATEX 1 277 X
EN 60079-18:2015+A1:2017	FTZU 23 ATEX Q 001

**IT COMPLIES WITH THE FOLLOWING GUIDELINES:**

Directive 2014/34/EU  
 Directive 2014/35/EU  
 Directive 2011/30/EU

**PLACE OF ISSUE:**

DIRAC Industries s.r.o.  
 K Automobilce 585  
 280 02 Kolin – Sendražice

**MANUFACTURER'S REPRESENTATIVE:**

Martin Šimůnek  
 Quality manager

**STAMP, DATE, SIGNATURE**

*M. Šimůnek*  
 DIRAC Industries s.r.o.  
 Průmyslová zóna Kolin, Ověřeny  
 K Automobilce 585, 280 02 Kolin - Sendražice  
 Tel: +420 323 040 700, Fax: +420 323 040 799  
 DIČ: CZ27956628





**DIRAC INDUSTRIES NV/SA**

J.B. Bosmansstraat 2  
B-1600 Sint-Pieters-Leeuw  
+32 (0)2 376 51 29  
+ 32 (0)2 376 16 95

**DIRAC INDUSTRIES S.R.O**

Prumyslova zona Kolin-Ovcary  
K Automobilce 585,  
280 02 Kolin, Czech Republic  
+ 420 323 040 700

**DIRAC INDUSTRIES KFT.**

Bagoly utca 12. 2120 Dunakeszi  
Hungary  
+ 36 30 422 2035

**DIRAC INDUSTRIES PVT LTD.**

509, Goodwill Infinity, Plot E/3A  
Sector 12, Kharghar, Navi Mumbai  
Maharashtra, India - 410210  
+ 91 83907 44712