

Ex-Junction Box JBP...Ex



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RESERVATION:

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

MANUFACTURER

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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.

DESCRIPTION

Ex-junction boxes are generally used for safe electrical connection of self-limiting and constant wattage & single core cables.

Ex-junction boxes can be used under extreme and chemical aggressive environmental conditions. The robust enclosure can withstand also rugged mechanical exposure.

The terminal boxes can be used in hazardous areas zone 1, 2, 21 and 22 according to the certified max. surface / ambient temperature.

CERTIFICATION & LABELLING

Manufacturer: DIRAC Industries s.r.o.
Part – number: JBP...Ex
Type: D*-****-****-***5/...
Type key, please see chapter 5
Certifications: EPS 23 ATEX 1229
Marking: II 2G Ex eb ia IIC/IIB/IIA T6/T5/T4
 II 2D Ex tb IIIC T85°C/T100°C/T120°C
Standarts: EN 60079-0, EN 60079-7,
EN 60079-11, EN 60079-31
Guedline: 2014/34/EU

CE:



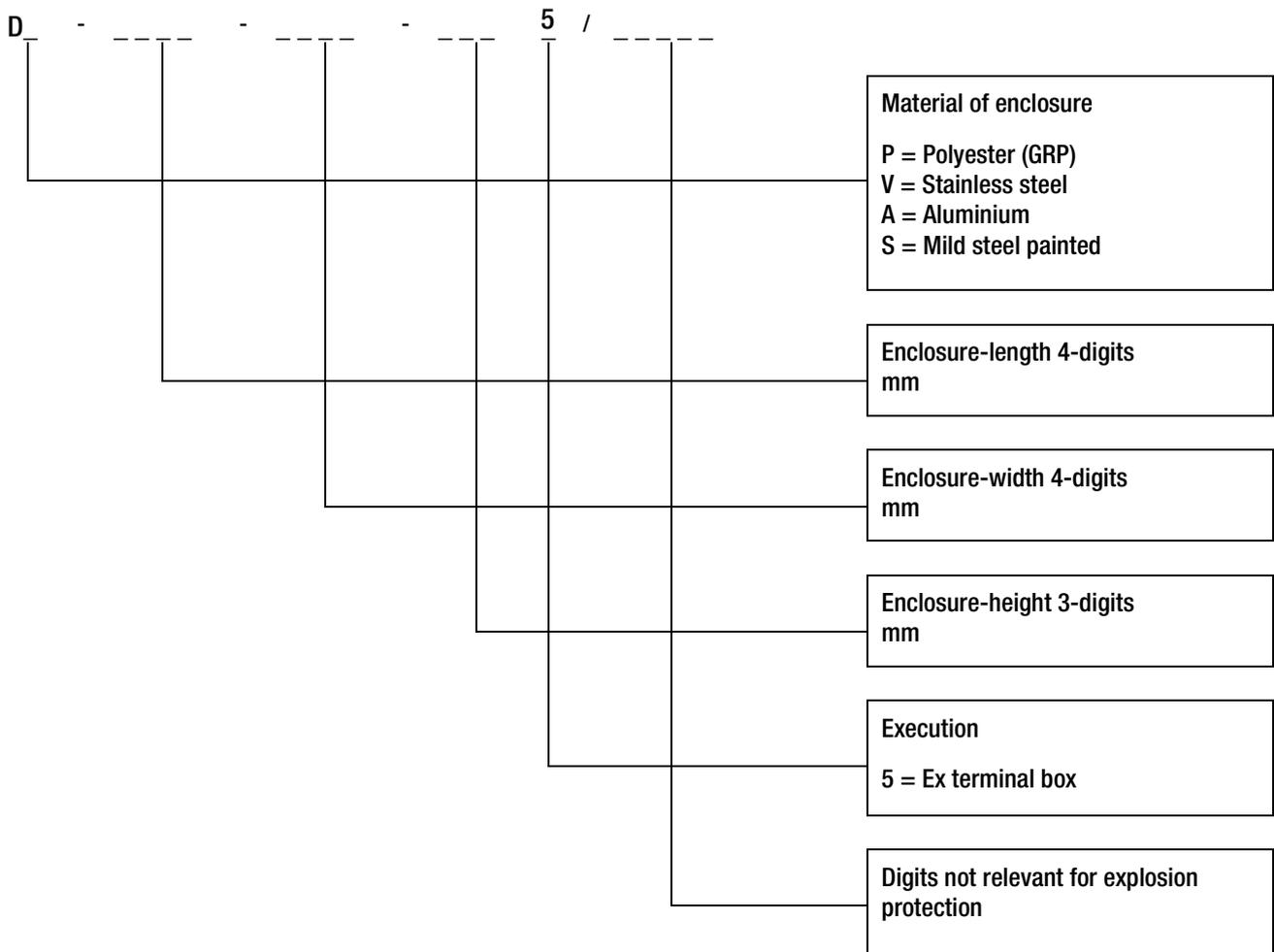
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TECHNICAL DATA

Material:	Glass fibre reinforced polyester black RAL 9005 $R_{\text{Surface}} < 10^9 \Omega$ Stainless steel 1.4404(V4A); 316L, Mild steel, varnished Aluminium
Lid screws:	captive stainless steel screws, +-profile or hexagon M4/M6
Sealing:	according to requirement of temperature range
Impact resistance:	according EN 60079-0: Impact energy 7 Joule
Protection Type:	IP66, according EN 60529 / IEC 60529
Terminals:	Certified connecting and/or series-terminals can be used with maximal rated voltage of 2200V AC/DC
Cable glands:	Certified cable glands which allow the connection of cables with IP66 protection shall be used. Metallic cable glands must be connected to the grounding system. Holes for cable entries which are not used shall be closed by Ex certified blind plugs of minimum protection IP66.
Rated voltage:	Max. 2200V AC/DC
Rated current:	Max. 500A AC/DC
Cross-section:	Max. 300mm ²
Ambient temperatures:	Max. $-60^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$ (T6) Max. $-60^{\circ}\text{C} \leq T_a \leq +55^{\circ}\text{C}$ (T5) Max. $-60^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ (T4) Specific data, please see type label.
Storage temperature range:	-60...+80°C

FOR ADDITIONAL INFORMATION PLEASE READ EC-TYPE EXAMINATION CERTIFICATE

TYPE KEY



SAFETY ADVICES

For electrical systems the relevant installation and operating regulations must be considered (e.g., Directive 1999/92/EC, 2014/34/EU, IEC/EN 60079-14 and the relevant national standards).

The operator of electrical installations in hazardous environment must maintain the equipment in proper condition, operate properly, monitor, and carry out maintenance and repair work. If the type of protection is concerned, only original parts may be used for exchange (e.g., cover sealing / cable glands). Assembly / disassembly, operation and maintenance work may only be carried out by trained specialist staff. For terminal boxes for use in areas with combustible dusts, the ignition temperature of the dust/air mixture or the glow temperature of the dust must be higher than the safety factor in EN 60079-14 and as the maximum surface temperature of the enclosure. It must be considered all the generally applicable statutory rules and other binding directives on workplace safety, accident prevention and environmental protection. Dust deposits >5mm must be eliminated. The terminal box is only allowed to use in the mentioned temperature class and temperature range (pls. see type label). The terminal box is not usable in Zone 0 her operation is only allowed in clean and undamaged condition. The usage in other than described areas or changing of product is not permitted and frees DIRAC Industries´ from any warranties. You must take care that all general rules and standard for occupational safety, prevention of accidents and environment protection are observed. Before commissioning and re-commissioning, you must take care that all laws, rules, and standards are observed. Safety advice printed on all parts must be observed. Data and information on type labels must be observed.

ASSEMBLY AND DISASSEMBLY

While installation & operation of electrical plants in hazardous areas the installation & operation instructions must be considered anytime (e.g., IEC/EN60079-14, and national installation standards).

Please notice the information marked on the label of the product and in EC type-examination certificate. Further information can be found in the DIRAC Industries´ product data sheets and is indicated on the product.

The assembling with connecting and/or series-terminals must be carried out taking into account the corresponding data of the EC-type examination certificate. Connections must be carried out carefully, so that the individual wires are not damaged. When connecting stranded or flexible conductors, the conductor ends must be prepared.

The attaching of ferrules must always be made with special crimping tools in order to achieve a constant quality of the compression. All terminal screws, also the unused must be tightened. The tightening torque must be obtained from the information provided by the terminal manufacturer.



WARNING – DO NOT OPEN WHEN ENERGIZED!



DANGER

Death or severe injury because of wrong installation.

There must be used a minimum of 4mm² grounding for connecting metal enclosures with the potential equalisation.

The connection has to be proven against self-untighten



WARNING

Injury because of wrong procedure.

Assembly, disassembly, installation and commissioning may only be made by qualified personnel who are skilled for installation of electrical components in hazardous areas. For mounting and operation of hazardous plants you have to consider the mounting and operating conditions. Do not disassemble or modify terminal boxes being under power. Please consider mounting manual and operation manual of all single components. While mounting please take care of: Install device torsion-free on ground.



NOTE

For enclosures mounted outside there has to be made special preparations to guarantee a safe operation to the demands e.g., usage of devices for protection of the enclosure against rain, “housing” of the enclosure with adequate protection class.

INSTALLATION OF COMPONENTS

In the junction box you are only allowed to install Ex-approved terminals.

Mounting manuals and safety advice have to be considered

INSTALLATION

**DANGER**

Death or severe injury because of usage not in accordance with regulations. Extension or changing of the terminal box is only allowed in accordance with the manufacturer. Please consider IEC/EN 60079-14.

PLEASE NOTICE FOR INSTALLATION:

- When connecting cables and wires to equipment of protection class "Ex e" (terminal boxes), only use Ex-certified cable entries that are suitable for the respective cable or wire type. You have to maintain the type of protection "Ex-e" and obtain a suitable sealing element so that the protection of the terminal box is maintained
- Connect metallic cable entries with the grounding system.
- Please close not required cable entries by Ex-approved closure elements.

CABLE GLANDS MUST HAVE AT MINIMUM FOLLOWING DATA:

- Temperature range acc. type-label or better
- Minimum 7Joule impact test (high impact category)
- IP protection acc. type-label

PLEASE NOTE FOR WIRE CONNECTION

- Ferrules must be crimped with suitable tool to ensure a reliable quality of the crimping.
- Execute the wire connection carefully
- Tighten all clamping points (also the unused).

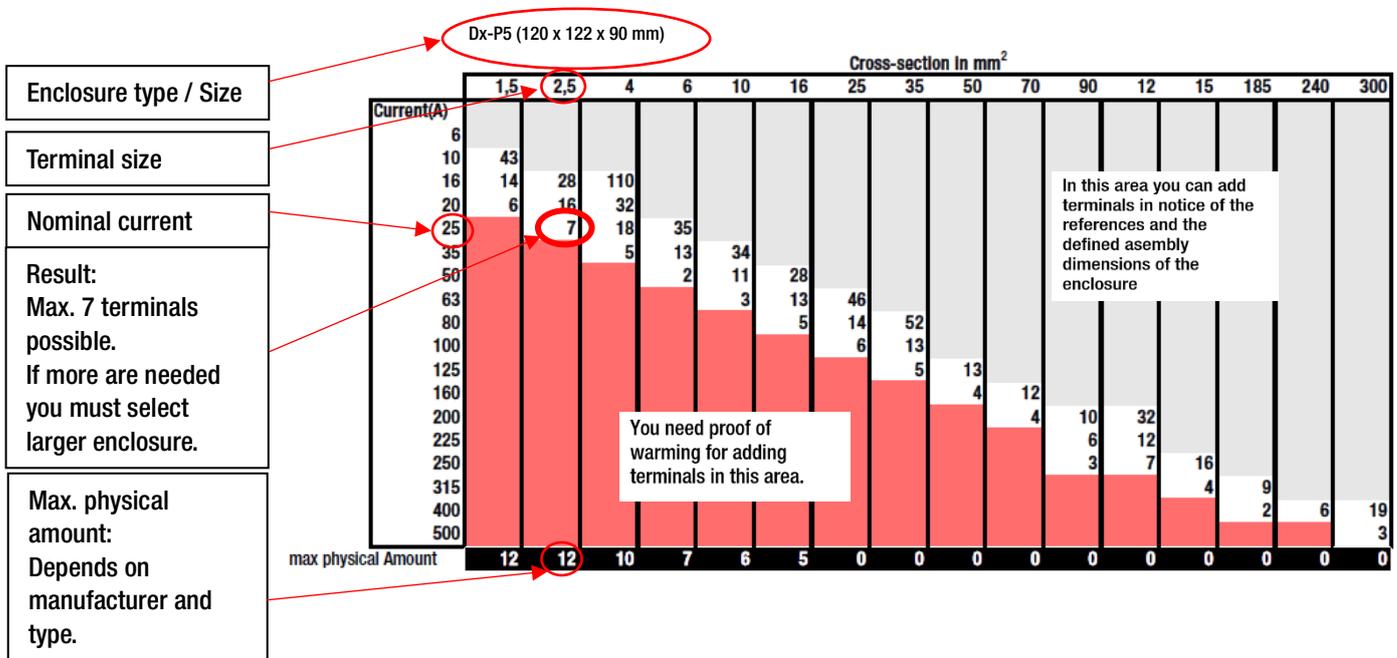
For enclosures mounted outside there has to be made special preparations to guarantee a safe operation to the demands e.g., usage of devices for protection of the enclosure against rain, "housing" of the enclosure with adequate protection class. If using enclosures or parts with 4J impact resistance, the operator must make special constructive preparations to ensure the protection of the enclosure.

**ENCLOSURES WITH CLEARANCE HOLES:**

If enclosures are delivered with clearance holes, without cable glands or stopping plugs, please notice: The clearance holes are masked with a printed Foil. Before commissioning the foil must be removed without leaving residues and replaced by approved cable glands or stopping plugs. The used cable glands or stopping plugs must be in accordance with the latest Ex-regulations, must have high impact category of minimum 7 Joule, and must be in accordance with all data of the type label of the enclosure. The Foil is used for dust and thread protection. It is laminated with special glue, so the foil can be easily removed within one year. Storage temperature range of the enclosures with foil is max. -20. +40°C and should not be exposed to direct sunlight. The enclosures should be used within one year. Otherwise, there is no guarantee for easily removing the foil.

HANDLING OF TABLES UNDER POINT 7 (FROM PAGE 13)

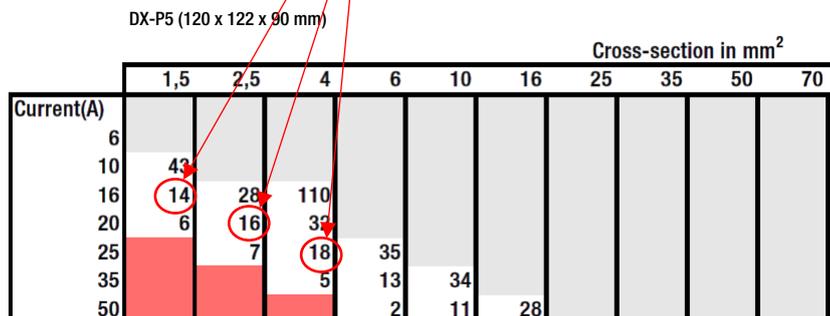
You can get the amount of terminals for a terminal box by consideration of terminal size and the max. current load in the according table of the selected enclosure. Using the table values, concomitance- or load factors according IEC 439 may be used.



Mixed assembling of circuits with different cross sections and currents are possible by proportionately usage of the table values.

Example (general):

Cross-section	Current	Amount of terminals	Utilisation
1,5mm ²	16A	7 (of 14)	= 50%
2,5mm ²	20A	4 (of 16)	= 25%
4mm ²	25A	4 (of 18)	= 22%
Sum			= 97% = OK (< 100%)



COMMISSIONING

Electrical equipment for a hazardous area must be selected according to the conditions to be determined for the individual installation conditions. Operating the equipment may only be carried out in undamaged and clean condition. Electrical installations have to be checked before first use and in regular intervals by qualified electrician.

Please check before commissioning:

- Device properly installed,
- Enclosure is not damaged,
- Connection made properly,
- Cable installed and wired correct,
- All screws tightened,
- Function is OK.

OPERATION, SERVICE & MAINTENANCE

The operator of an electrical plant in hazardous areas must guarantee that all devices are in good condition. He has to operate these devices and do the maintenance work within the allowed parameters (please notice EN 60079-14 and EN 60079-17). Maintenance & Service work must be made by trained staff only. It's only allowed to use original spare parts (sealing and cable glands) if replacement is necessary. Damaged parts must be replaced immediately. The applicable laws and regulations must be considered before restarting. Before maintenance and/or troubleshooting the safety regulations have to be considered.



WARNING – DO NOT OPEN WHEN ENERGIZED!



DANGER

Death or severe injury because of usage not in accordance with regulations.

Please operate the terminal box only in the applicable technical limits materials.

MAINTENANCE

The operator of the terminal box has to keep them in good condition, operate it properly, monitor and clean it regularly.

- Visual inspection of the enclosure for damage.
- Check sealing effectiveness.
- Replace old or damaged sealing with new original seals.
- Check if terminals, cables and line bushings are fastened.

NOTE

During maintenance please check properly especially parts that depend on the type of protection and the function.

TROUBLESHOOTING

The terminal box is defective if the enclosure is damaged or if some components are no longer functional.

In this case:

- Defective enclosure must be replaced by original parts.
- Defective components must be replaced by original parts.

NOTE

For replacement or repair please observe applicable installation instructions for individual components.

TRANSPORTATION, STORING



ATTENTION

Damage to the terminal box by incorrect transport or improper storage. Transport and storage is permitted only in original packaging.



DANGER

Death or injury through damaged enclosure.

Replace defective parts immediately with original parts.



WARNING

Injury due to incorrect procedure.

All work on maintenance and troubleshooting must be carried out

exclusively by authorized personnel.

The IEC/EN 60079-17 must be observed.

DISPOSAL

The components of the terminal box obtain metal and plastic parts.

Therefore the legal requirements for electronic waste must be observed (eg. disposal by an approved disposal company).Country-specific standards must be observed.

ACCESSORIES, SPARE PARTS

Please ask DIRAC Industries´ for further information.

TABLE TERMINAL CONFIGURATION JUNCTION BOX

Dx-P2 (110 x 75 x 55 mm)

Current(A)	Cross-section in mm ²															
	1,5	2,5	4	6	10	16	25	35	50	70	90	12	15	185	240	300
6																
10	27															
16	9	18	72													
20	4	10	20													
25		5	11	22												
35			3	8	22											
50					7	18										
63					2	8	30									
80						3	9	33								
100							4	8								
125								3	9							
160									3	8						
200										2	6	21				
225											4	8				
250											2	5	10			
315													3	6		
400															4	12
500																2

In this area you can add terminals in notice of the references and the defined assembly dimensions of the enclosure

You need proof of warming for adding terminals in this area.

Dx-P5 (120 x 122 x 90 mm)

Current(A)	Cross-section in mm ²															
	1,5	2,5	4	6	10	16	25	35	50	70	90	12	15	185	240	300
6																
10	43															
16	14	28	110													
20	6	16	32													
25		7	18	35												
35			5	13	34											
50				2	11	28										
63					3	13	46									
80						5	14	52								
100							6	13								
125								5	13							
160									4	12						
200										4	10	32				
225											6	12				
250											3	7	16			
315													4	9		
400														2	6	19
500																3

In this area you can add terminals in notice of the references and the defined assembly dimensions of the enclosure

You need proof of warming for adding terminals in this area.

Dx-P7 (160 x 160 x 90 mm)

Current(A)	Cross-section in mm ²															
	1,5	2,5	4	6	10	16	25	35	50	70	90	12	15	185	240	300
6																
10	48															
16	16	32	125													
20	6	18	36													
25		9	20	39												
35			6	15	38											
50				2	12	31										
63					4	14	52									
80						5	16	58								
100							7	15								
125								6	15							
160									5	13						
200										5	12	37				
225											6	14				
250											3	8	18			
315													5	11		
400														2	7	22
500																4

You need proof of warming for adding terminals in this area.

In this area you can add terminals in notice of the references and the defined assembly dimensions of the enclosure

Dx-P8 (260 x 160 x 90 mm)

Current(A)	Cross-section in mm ²															
	1,5	2,5	4	6	10	16	25	35	50	70	90	12	15	185	240	300
6																
10	52															
16	18	34	135													
20	7	20	39													
25		9	22	42												
35			6	16	41											
50				2	13	34										
63					4	16	56									
80						6	17	63								
100							7	16								
125								6	17							
160									5	15						
200										5	13	40				
225											7	15				
250											4	9	20			
315													5	12		
400														2	8	23
500																4

You need proof of warming for adding terminals in this area.

In this area you can add terminals in notice of the references and the defined assembly dimensions of the enclosure

TERMINAL CONFIGURATION OF OTHER JUNCTION BOX SIZES PLEASE READ EC-TYPE EXAMINATION CERTIFICATE

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:

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

FOR THE PRODUCTS:

Junction boxes with terminals

Notified body: Bureau Veritas

TYPE DESIGNATION:

D*.....*****5/...

THE PRODUCT CORRESPONDS TO:

EN IEC 60079-0:2018	EN IEC 60079-7:2015/A1:2018
EN 60079-11:2012	EN 60079-31:2014
EPS 23 1 229	FTZU 23 ATEX Q 001

IT COMPLIES WITH THE FOLLOWING GUIDELINES:

Directive 2014/34/EU

PLACE OF ISSUE:

DIRAC Industries s.r.o.
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 280 02 Kolin – Sendražice

MANUFACTURER'S REPRESENTATIVE:

Martin Šimunek
 Quality manager

STAMP, DATE, SIGNATURE

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