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## INDEX CARD

### Flameproof boxes type 2-USO 2 - \*\*\*\* - \* with a universal connector for connecting power cables and cables for 3.6 / 6 kV voltage

By connecting two USO 2 - \*\*\*\* type boxes with a universal connector, a flameproof enclosure type 2- USO 2- 6402-R is created, which enables the connection of a 3.6 / 6 kV cable with 6 working cores with two cables or wires. with a voltage of 3.6 / 6kV with 3 working cores. The use of an additional universal connector creates a passage box. The resulting structure is designated 2-USO 2-6402-P.

Universal flameproof boxes type USO 2 - \*\*\*\* are suitable for safe use in underground mines in workings classified as grade "a", "b" or "c" of methane explosion hazard and "A" or "B" class of dust explosion hazard carbon. Universal flameproof boxes type USO 2 - \*\*\*\* are intended for connecting thermoplastic-based mining power cables and mining sheathing cables with electromagnetic insulation, sheath and tire with rated voltages not exceeding 3.6 / 6 kV in all excavations non-methane and methane mining plants.

#### Rated data:

Box type	2-USO 2-6402-R, 2-USO 2-6402-P
Rated voltage $U_N$ Rated current $I_N$	6000 V+20%; max 7200V 400 A
Rated voltage of auxiliary and control lines	25 V AC; 60 V DC
Short circuit current $I_z$ Short circuit time $t_z$	10 kA 0.1 s
Number of inlets	1+2 inlets for the manifold 1+1 inlets for the through-hole
Type of inlets, type of inlets/plug	<b>WKp-1, WKp-2, WKp-3, WKp-4, Z-WKP</b> KDB 05ATEX148U I M2 Ex d I Mb I 2G Ex d I IC
Inlet reduction type	<b>R-WMg</b> OBAC 09ATEX012U I M2 Ex d I Mb
Possible combinations: - power wires, - control wires, - grounding wires, - force veins' screens - general screens	$\text{Ex}$ max 1 wire/phase, 150 mm <sup>2</sup> max 6 wires, max 4 mm <sup>2</sup> max 70 mm <sup>2</sup> into the housing into the housing
IP protection class	IP-54
Working temperature	from -10° C to +40° C
Work location	horizontal
Total weight	about 110 ÷ 130 kg
Remarks:	- Weight shown without cable inlets, - Each inlet socket can be plugged with an approved Z-WKp inlet plug or R-WMg reducer



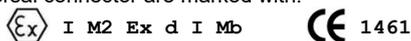
#### Flameproof box type 2-USO 2 - \*\*\*\* - \* with a universal connector:

- **2-USO 2-6402-R** – box with an insulation level of 6000 V + 20%, with 400 A current terminals, 2 cable inlet sockets, branching
  - **2-USO 2-6402-P** – box with an insulation level of 6000 V + 20%, with 400 A current terminals, 2 cable inlet sockets, straight-through
- For boxes type USO 2-1402, USO 2-1403, USO 2-1404 it is possible to use three types of covers: cover without sight windows or cover with four sight windows WZA-70 or three sight windows type WZA-90. For USO 2-6352 mailboxes, USO 2-6353 the cover is without sight glasses.

#### Certificate:

Flameproof boxes type 2-USO 2 - \*\*\*\* - \* with a universal connector have the EU examination certificate: OBAC 13ATEX0291X of November 22, 2013. issued by the Center for Testing, Attestation and Certification OBAC Sp. z o. o. in Gliwice. The basic requirements of safety and health protection were implemented by meeting the requirements of the following standards: PN-EN 60079-0: 2013 and PN-EN 60079-1: 2014.

Flameproof boxes type 2-USO 2 - \*\*\*\* - \* with a universal connector are marked with:



#### Admission:

By the decision of the President of WUG, universal flameproof boxes type 2-USO 2 with a universal connector are approved for use in underground mines.

Device	WUG approval mark	Document
2-USO 2	GX - 95/14	L.dz. 22484/07/2014/RS/KR/GEM.4740.46.2014

#### **1. Purpose of the flameproof boxes type 2-USO 2 - \*\*\*\* - \* with a universal connector**

Flameproof box type 2-USO 2 - \*\*\*\* - \* with a universal connector is a mechanical connection of two boxes type USO 2 - \*\*\*\* which allows you to connect a 6-core cable from the supply side and divide it into two cables / wires 3-wired which is attached to the universal connector by the inlet of



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the WKp series and with the use of a mounting bracket. In the center of the universal connector, the split cores of the 6-wire cable are distributed directly into the appropriate openings of USO 2 - \*\*\*\* type boxes, then connected to insulators.

Flameproof boxes type 2-USO 2 - \*\*\* - \* with a universal connector, the main purpose of which is to connect power cables and mining cables, intended for operation in the underground of mining plants with the same wire cross-sections. It is also allowed to connect sections of cables and wires with different cross-sections, but the maximum load for a given 3-line system cannot be higher than the allowable load for a cable or wire section with a smaller cross-section and not greater than the allowable load for a given type of junction box used.

Various combinations of connected elements are allowed, i.e.:

- 6-wire cable----- 3-wire cord + 3-wire cable,
- 6-wire cable ----- 3-wire cable + 3-wire cable,
- 6-wire cable ----- 3-wire cord + 3-wire cord.

#### **2. Description of the construction of flameproof boxes type 2-USO 2 - \*\*\*\* - \* with a universal connector**

The universal connector as a flameproof casing is made of 8 and 12 mm thick sheets welded together by a tight weld. The sheet metal to which the USO 2 inlets are screwed and the flat bars forming the flameproof joint with the cover (after its installation) are 12mm thick. Each threaded hole has a threaded sleeve welded from the inside by a tight weld. All tapped holes have a medium-precision fit. The cover of the universal connector is made of 12 mm thick sheet metal, it also has protective sleeves for bolts welded on.

The WKp socket is tightly welded to the front plate of the universal connector. The rear sheet is milled over the entire surface to a minimum thickness of 10mm, the same is the case with the flameproof surface and the cover of the universal connector.

A fastener for a 6-wire cable is welded to the bottom inside the universal connector. In the center of the universal connector there is a grounding clamp for grounding the screen of the general cable. On the outside of the universal connector, there is one earthing terminal for grounding the 2-USO 2 - \*\*\*\* - \* type flameproof box together with the universal connector.

The closure of the universal connector is a flameproof cover with a flameproof flange surface. The cover is screwed with M10x35 allen screws in class 12.9.

The flameproof box type 2-USO 2 - \*\*\*\* - \* together with the universal connector is covered externally with one layer of Gruntokor C phthalic primer, and then with one layer of Nitromal cellulose enamel (red) in order to protect against corrosion. The universal connector inside is painted with Nitromal cellulose enamel (white). Thickness of the varnish layer  $\leq 0.2$  mm.

The universal connector includes two USO 2 inlets, which are made of a shaft. The shaft is pre-treated and then a sheet of metal is welded to it. Between the sheet of the universal connector and the USO 2 groove, screwing four M10x35 allen screws in class 12.9 creates a flange-proof flange joint, and the USO 2 groove with the WKp socket of the USO 2 - \*\*\*\* box forms a flameproof cylindrical joint.

#### **3. The use of 2-USO 2 - \*\*\*\* - \* type flameproof boxes with a universal connector**

By connecting two USO 2 - \*\*\*\* type boxes with a universal connector, a flameproof enclosure type 2- USO 2- 6402-R is created, which enables the connection of a 3.6 / 6 kV cable with 6 working cores with two cables or wires. with a voltage of 3.6 / 6kV with 3 working cores. The use of an additional universal connector creates a passage box. The resulting structure is designated 2-USO 2-6402-P.

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**The universal flameproof boxes type USO 2 - \*\*\*\* have the approval of the State Mining Authority and the ATEX certificate: OBAC 09ATEX266X of 30.07.2012.**



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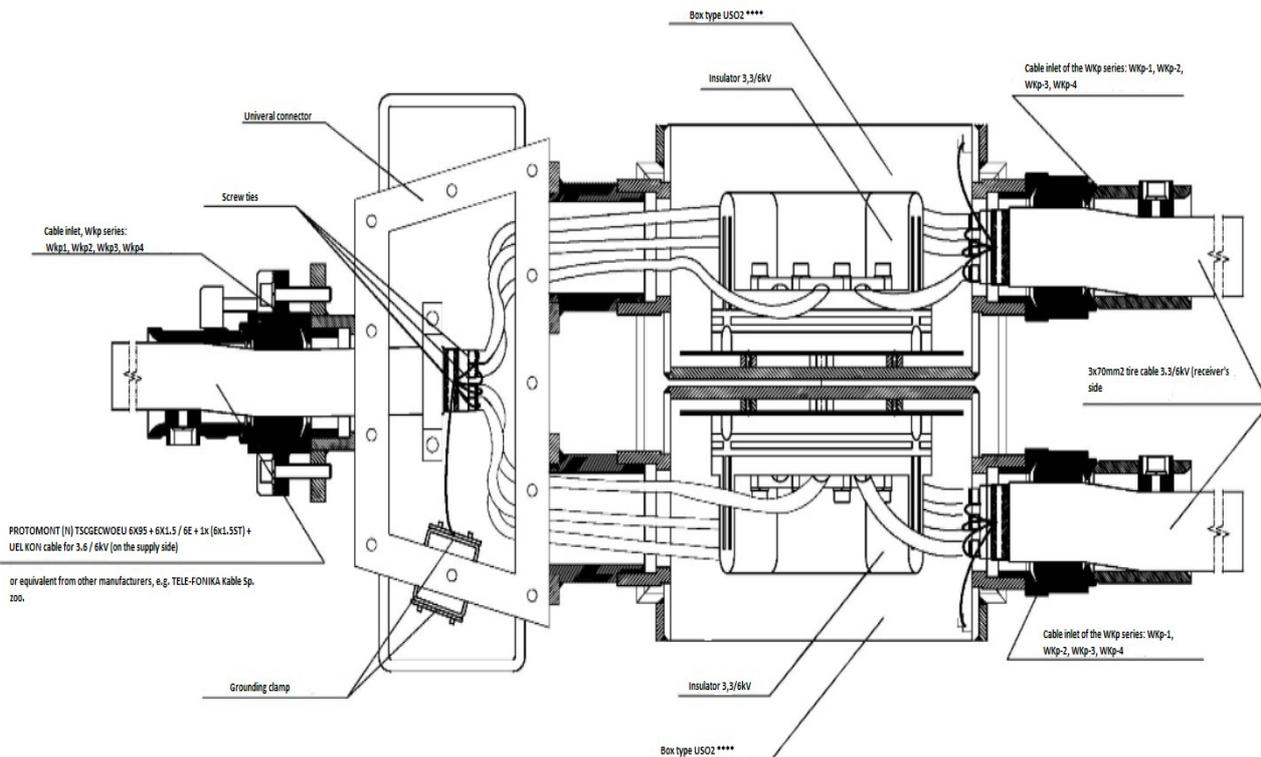
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**Universal flameproof boxes type USO 2 - \*\*\*\* in underground workings of mines may be used only for connecting cables and shielded wires.**



**2-USO 2-6402-R** – box with an insulation level of 6000 V + 20%, with 400 A current terminals, 2 cable inlet sockets, branching



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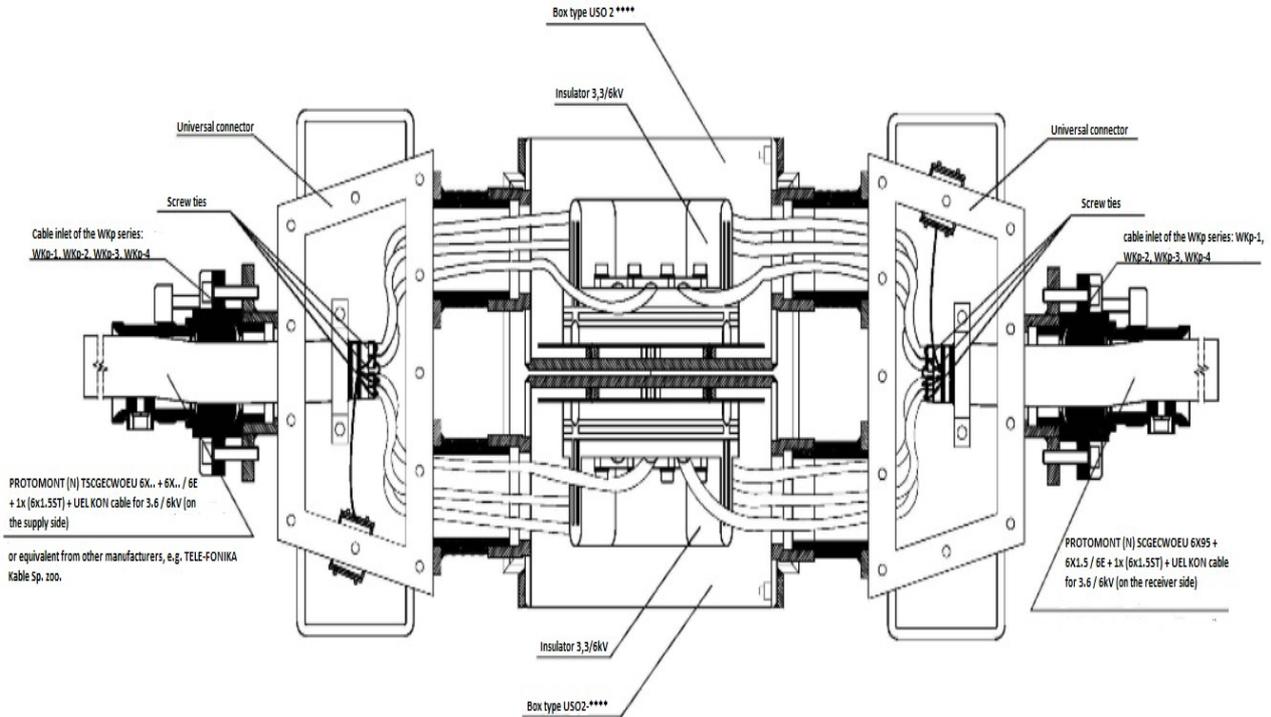
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2-USO 2-6402-P - box with an insulation level of 6000 V + 20%, with 400 A current terminals, 2 cable inlet sockets, straight through