Technical information
Version 1.1 | Date 05/2010

Mounting instructions for OBO isCon® system

THINK CONNECTED.

Contents

Montageanleitung OBO isCon®-System / en / 02/08/2010 (LLExport_01080)

1. General note

Ever-more complex requirements made by architects and clients mean that the planner of a lightning protection system requires a wealth of knowledge to ensure correct erection. The lightning protection system should match the building structure but, at the same time, guarantee its full function should lightning strike, and ensure the electromagnetic compatibility of the installed electrical systems. The separation distance plays a key role in external lightning protection. There are a series of points which must be taken into account to maintain the separation distance. The OBO isCon® cable was developed for simple, secure maintenance of the separation distance, even in complex building structures. To obtain first experience in planning and installation using the OBO isCon® system, we recommend a comprehensive training course.

Keep yourself up-to-date with the OBO isCon® newsletter (registration at www.iscon.obo-bettermann.com).

2. Technical data

VPE = Moistened polyethylene

EVA= Ethylene vinylacetate copolymer

Technical data

Type	isCon 750 SW
Colour	Black
Equivalent separation distance, air	≤ 750 mm
Equivalent separation distance, solid materials	≤ 1500 mm
External diameter	23 mm
RM cable, Cu	35 mm²
Cable weight	approx. 694 kg/km
Temperature range for routing	min. 0 °C, max. 40 °C
Operating temperature	max. 90 °C
Bend radius (min. 15x D)	min. 360 mm
Tensile strength	1,750 N

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3. Planning

The interception system
The routing of the interception system is planned taking DIN EN 62305-3 into account. The area to be protected must be designed specially according to the height and arrangement of the interception system.

The down conductor
The cable must be located in the protection area of the interception system and be fastened at a distance of a maximum of 1 metre using the installation material indicated. Only the connection element may be connected to the interception unit or forwarding arrester of the external lightning protection.

The maximum cable length is calculated from the defined lightning protection class of the system and is similar to the calculation of the separation distance.

The separation distance is calculated as follows according to the lightning protection standard VDE 0185-305-3 Section 6.3:

In so doing:
Coefficient k_i
is dependent on the selected protection class of the lightning protection system.

Coefficient k_c
is dependent on the lightning current that flows into the arresters (number of arresters).

Coefficient k_m
is dependent on the electrical insulation material (air = 1, material: 0.5)

L
is the length in metres along the interception system or arrester from the point at which the separation distance is to be calculated up to the closest point of the equipotential bonding.

The isCon® cable reflects an equivalent separation distance of 0.75 metres. This means that the formula can be simplified and adapted. Thus, the maximum length of an conductor can be calculated for a calculated separation distance of 0.75 metres, depending on the protection class of the lightning protection system, as follows:

$$s = k_i \frac{k_c}{k_m} L(m)$$

In this case, the maximum lengths are calculated for a single cable. If necessary, the connection of a second cable permits the maximum length to be increased by the factor kc. The lightning current creates magnetic fields, which generate induced surge voltages in the cable coils inside the building. In the electrical installation, these are limited by Type 2 (Class II) arresters. To keep these magnetic fields as small as possible and avoid interference between the isCon® cables, the cables should be routed as far apart as possible. Ideally, the second cable should be run to the ground on the other side of the building.

Maximum length of isCon® cable for s = 0.75 m (one conductor)

LPS – lightning protection class	Maximum length of the isCon® cable
I	9.37 m
II	12.50 m
III + IV	18.75 m

4. Cut and remove insulation of the isCon® cable

The cable is sold by the metre. It is shortened to the required length on site using standard cable cutters or a saw.

The OBO isCon® cable is made up of five parts. A 35 mm² cable is surrounded by an internal conductive layer and highly voltage-resistant VPE insulation. In turn, this insulation is surrounded by an external conductive layer and with an additional jacket made of weakly conductive material.

25 mm of the copper core must be exposed using a cable stripper (isCon® stripper 5408009):

1. Cut down cable to required length and free it from dirt

2. Adjust the cutting depth of the pliers (do not cut the copper core)

3. Apply the pliers and cut 25 mm of the jacketing, then turn it through 360°

4. Turn the blade head of the pliers by pressing the locking button

5. Cut the cable in a lengthwise direction on opposite sides

6. Turn the pliers to loosen the external jacket

5. Installing the end piece

For operation, the copper core must be connected to the weakly conductive jacket using a connection element (isCon® connect 5408022).

The connection element is mounted when the copper core has been exposed.

1. Scope of delivery: 2 end pieces + 2 heat-shrinkable sleeves + screw lock + Allen key

2. Turn the connection element to move it up to the cable (WAF 27). Remove the pin screws and ensure that the element is screwed on enough.

3. Apply the screw lock to the pin screws

4. Tighten with approx. 5 Nm

5. Position the heat-shrinkable sleeve and shrink it using a hot-air blower or gas burner

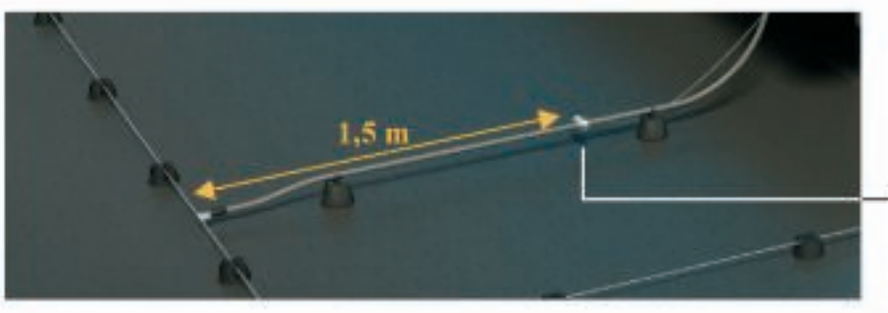
6. Let it cool and install it

6. Installing the potential connection

Potential control should be created using a potential connection element after the first 1.5 metres (for s = 0.75 metres) after the connection element. No electrically conductive or earthed parts may be located in this area in the radius of the calculated separation distance. These include, for example, metallic construction parts and cable brackets as well as assemblies. The potential control element should be connected to a reference potential using ≥ 6 mm² Cu or an equal conductivity. Lightning current may not flow through the reference potential and it must be in the protection angle of the lightning protection system. This means that the potential connection can me made via metallic and earthed roof structures, generally earthed parts of the building structure and via the protective conductor of the low-voltage system.

After the first potential connection behind the connection element, the isCon® cable reflects an equivalent separation distance of up to 0.75 metres in the air according to VDE 0185-305-3 (IEC 62305-3). This means that installation is possible directly on metallic and electrical structures. There is no direct arcing between the conductor and the building to be protected.

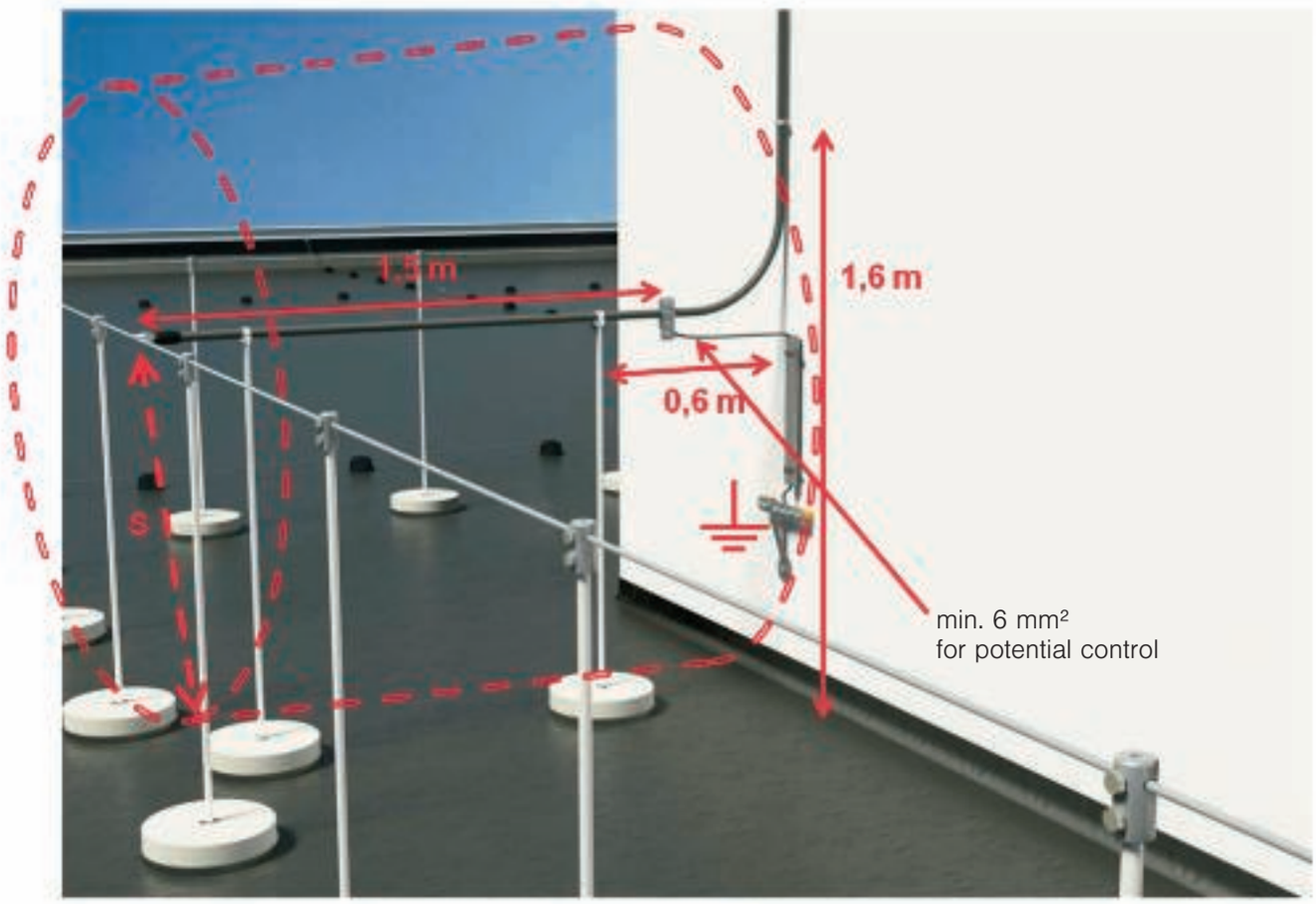
Fasten the potential connection clips in such a way that the jacketing of the cable is not cut or squashed.



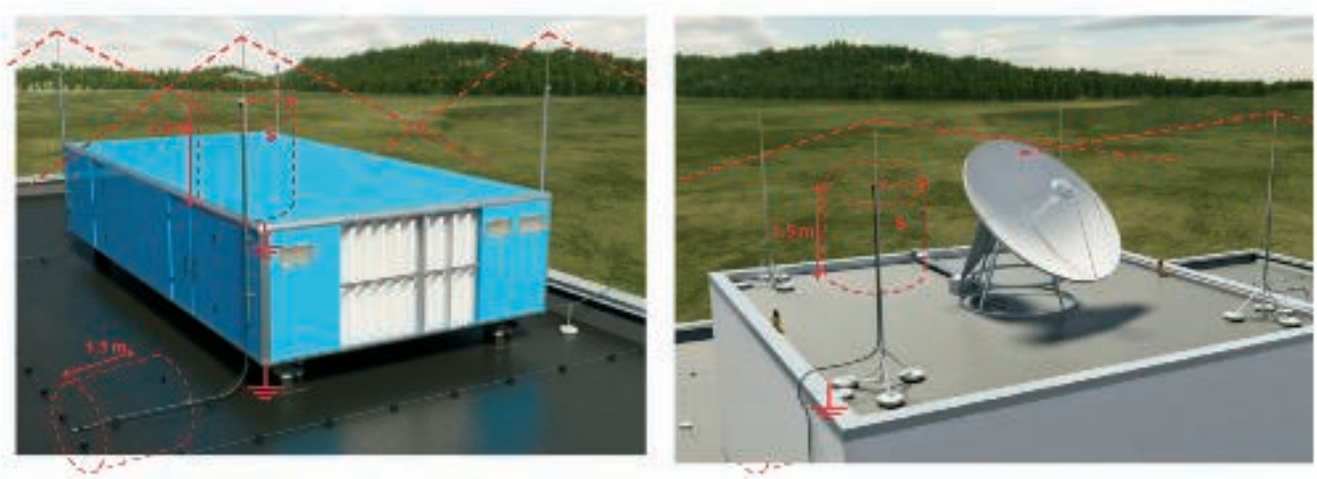
Art. No. 5408036

Art. No. 5057599

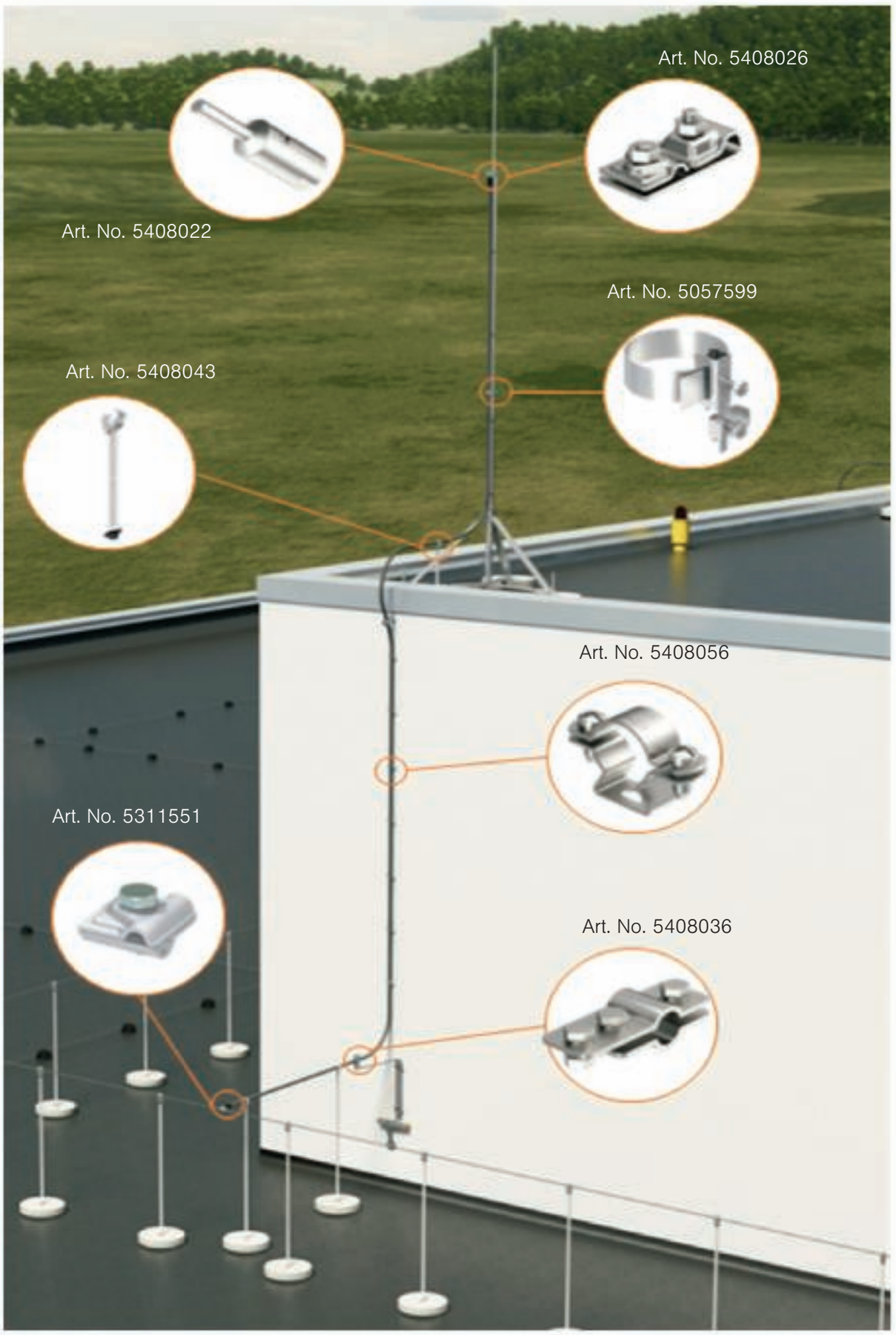
7. Installation examples



Installation on stand-off ring cables



Protection of roof structures


Art. No. 5408026
Art. No. 5408022
Art. No. 5057599
Art. No. 5408043
Art. No. 5408056
Art. No. 5311551
Art. No. 5408036

8. Notes

The OBO isCon® system is a range of matching components. For installation, please use only components of the OBO product range, as otherwise there is no guarantee that safe installation is possible.

Ensure the cable is free from soiling.

The jacketing of the OBO isCon® cable may not be cut or damaged.

The jacketing of the OBO isCon® cable may not be painted a different colour. Should you desire a different colour variant, please get in touch with your OBO contact.

Routing the OBO isCon® cable in the ground is not permitted.

If you wish to use the OBO isCon® cable in an environment not described here, then please get in touch with your OBO contact.

Special knowledge is required to be able carry out the planning and routing of the isCon® cable correctly. This knowledge is imparted by these current installation instructions, but can also be deepened in special OBO workshops.

Register at www.iscon.obo-bettermann.com to receive the OBO isCon® newsletter to ensure you are always kept up to date. The newsletter provides information about updates on mounting instructions, new products and additional points of interest regarding the OBO isCon® system.

9. Testing report for the OBO isCon® system

Tested building

Name

Contact persons

Number/street

Postcode/town

Telehone

	Question	Yes	no
1,	Are all the connection elements installed correctly according to the mounting instructions?		
2,	Is the entire routed OBO isCon® cable in the protected area of the interception system?		
3,	Is the external jacket of the cable free of damage?		
4,	Was the separation distance calculated for the location to be protected?		
5,	Is the equivalent separation distance of s ≤ 0.75 m through the air, s ≤ 1.5 m through solid material maintained?		
6,	Is the separation distance maintained in the first and last 1.5 metres of the isCon® cable?		
7,	Is the potential connection connected to the local equipotential bonding of the system to be protected using isCon-PAE with a cable of at least 6 mm²?		
8,	Is the minimum bend radius of 360 mm maintained?		
9,	With a stand-off installation, is the separation distance to the roof area maintained in the area up to the first equipotential bonding clip?		
10,	Have you ensured that there are no metallic parts/cable brackets, etc. in the area up to the first equipotential bonding clip (distance of the calculated separation distance to the cable)?		

Place/date

Tester

Signature

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www.obo-bettermann.com

OBO Bettermann GmbH & Co. KG
PO Box 1120
58694 Menden, Germany

Customer Service Germany
Tel.: +49 (0)2373 89-1500
Fax: +49 (0)2373 89-7777
E-mail: info@obo.de

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