Busbar Shielded Systems – type: Cast Resin
Low Voltage

The shielded busbar system, ISOBUSBAR®, type IS isolated in polyester or epoxy resin, have been specifically developed for transportation and distribution of electric energy in a range of intensities from 160 to 6300 A and a voltage up to 1000 V.
The design was made to answer almost all possibilities in installation and connections. Due to his special characteristics and his solid construction, our product is the ideal system for use in all surroundings. Even in corrosives and aggressive environment.

Isobusbar® “IS –series”

Composition:

**Conductors:**
- The conductors are profiles and/or copper bars with a purity greater that 99,9%.
- ETP 99,9 DIN 1787-46433-40500.

**Connection holes:**
- Adapted for intensity and temperature-rise.
- Limited according the standards EN60439-1 & -2.
Double insulation:
1. First: taped around the entire length.
2. Second: the enclosure of the ISOBUSBAR® cast resin products consists of a polymerised synthetic resin (polyester or epoxy), reinforced with mineral charges.

Isobusbar® “IS –series”

The conductors are completely isolated prior to be installed in the cast resin isolation (double). These insulated conductors are immersed in our special polyester or epoxy resin mixture. Our design offers very good thermal characteristics and is in full compliance with the applicable standards. Moreover it ensures excellent mechanical resistance and short-circuits withstanding. The special enclosure also assures complete protection of the conductors in a corrosive and aggressive ambience.

The significant advantages of these busbars compared to traditional systems are:

- Integral isolation of the complete line.
- Overload admissible. Up to 25% during two hours.
- Easy and fast installation without the need of special tools.
- Maintenance free.
- In accordance with IEC 60439/1-2 standards and equivalents.
- Degree of protection IP-66 or IP68 for the complete line, as per IEC-60529 standard.
- Maximal resistance against salty, corrosive and/or aggressive atmosphere and suitable for outdoor use. Pollution Degree 4, IEC-60664-1.
- Large contact surfaces between busbars elements and connected electrical equipments, assuring optimal current density.
- Installations without chimney effects, meaning no flame propagation.
- Fire resistance in accordance with IEC 60439/1-2 standards.
- Function integrity of > 40 min. in plain fire.
**Structure:**

- 3 phases
- 3 phases + N (50%)
- 3 phases + N (100%) or (2N – 50%)....

**Possible configurations:**

- 3P, 3P+N, 3P+PE, 3P+1/2N, 3P+1/2N+PE, 3P+N+PE, 3P+PEN, 3P+2N.

The ISOBUSBAR® IS-series type can be used as a riser busbar to distribute the electrical energy. The tap-off boxes can be fixed to the busbar or plugged in into the system. The plug-in boxes have an IP-54 degree of protection and the fixed boxes are suitable for IP-66 degree of protection.

**Tests specifications:**
- Type test: performed in accredited laboratories according to ISO17025.
- Routine tests: dielectric strength and insulation level, performed on all manufactured components.
Temperature-rise limits (conductors and enclosure):

Test arrangement according with the standard IEC60439:

- **Ambient air temperature**: max 40°C,
- **Temperature-rise limits**
  - **Conductor (joints):**
    - 90K (class B)
    - 115K (class F)
  - **Enclosure (resin insulation):**
    - 55K

Also to consider: the reduction factors related to temperature and effects of the proximity to any electrical conductors.

*The test shall be made for a sufficient time for the temperature rise to reach a constant value (but not exceeding 8 h). In practice, this condition is reached when the variation does not exceed 1 K/h. (To shorten the test, if the devices allow it, the current may be increased during the first part of the test, it being reduced to the specified rated current afterwards.)*
Isobusbar® “IS –series”

Fire resistance according with the standards: IEC60439- 1 & 2:
- Resistance to abnormal heat and fire.
- Verification of resistance to flame-propagation.
- Verification of fire resistance.

Test result after 4 hours of plain fire → no flame propagation:

* All tests are conducted in accredited laboratories according to ISO17025 standard. *
Tests performed:

Verification of temperature rise limits

<table>
<thead>
<tr>
<th>A.</th>
<th>ref</th>
<th>mm²</th>
<th>Rapport</th>
<th>Limit (K)</th>
<th>Temperature Rise (K)</th>
<th>Temperature Rise (K)</th>
<th>kA/1s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>enclosure</td>
<td></td>
<td>enclosure</td>
<td>conductor in the joint</td>
<td>Short-circuit</td>
</tr>
</tbody>
</table>

| 800 | ISC08/1 | 325 | B124-03-BP-11-02e | 55 | 16,3 | 36,8 | 37,4 | 40 |
| 1000 | ISC10/1 | 400 | B124-03-BP-11-03e | 55 | 21,0 | 53,6 | 54,3 | 45 |
| 1250 | ISC12/1 | 500 | B124-03-BP-11-04e | 55 | 28,1 | 56,7 | 60,7 | 50 |
| 1750 | ISC17/1 | 750 | B124-03-BP-11-05e | 55 | 30,6 | 73,4 | 78,8 | 56 |
| 2000 | ISC20/1 | 1000 | B124-03-BP-11-06e | 55 | 25,8 | 57,1 | 59,0 | 70 |
| 2500 | ISC25/1 | 1400 | B124-03-BP-11-07e | 55 | 34,4 | 65,5 | 69,3 | 80 |
| 3150 | ISC31/1 | 1700 | B124-03-BP-11-08e | 55 | 31,6 | 74,8 | 80,3 | 85 |

| 4000 | ISC40/1 | 2100 | B124-04-BP-EE-01E | 55 | Max 29,3 | Max 64,7 |

Other test:
- Verification of the dielectric properties (5250V- 5s).
- Degree of protection (IP66-IP68).
- Verification of clearances and creepage distances (pollution degree 4 = the pollution generates persistent conductivity caused, for instance, by conductive dust or by rain or snow).
- Verification of the structural strength with normal mechanical loads.
- Determination of resistance, reactance and impedances values.

Laboratory: Labein (http://www.labein.es/)
Isobusbar® “IS –series”

Modelpieces:
- straight line:

- straight line with tap-off box

- elbow 90° and Z-piece, horizontal and vertical
Isobusbar® “IS–series”

Special flanged ends (terminations to transformers, panels, switchgears ...) and joints:
Terminations: flexible laminated coupling pieces and protection box (IP42/55) possible to be painted in the same RAL colour as the installation.

**Note:**

In this brochure we show the standard elements. But it’s possible to manufacture any custom-made pieces specially designed for your project. Our technical department will study each request for special pieces and check the possibilities of manufacturing. All dimensions, lengths, weight … can be requested according your project.

Moreover, we can supply apart from the busbars, all necessary accessories such as flexibles, mounting brackets, expansion units, fire barriers, coupler boxes,…. and others.

**Technical assistance during the installation works on site is available under request.**
Isobusbar® “IS – series”

Example of terminations and joints:

As well as the busbars, Nexans supplies all MV-accessories for transformer and/or panel connections.

Please visit our website: [www.euromold.be](http://www.euromold.be) or [www.nexans.be](http://www.nexans.be) for all your requests.
Examples of realisations:
Busbar Shielded Systems – type: Cast Resin
Medium Voltage

The shielded busbar system, ISOBUSBAR®, type IMT (non segregated busbar) and IMTS (segregated busbar) isolated in polyester or epoxy resin have been specifically studied for the transport and distribution of electric energy in a range of intensity from 1000 to 6300 A and a voltage between 3 and 36 kV.
The design was made to answer almost all possibilities of installation and connection.
The special characteristics and the solid construction make our product the ideal system for use in corrosives and aggressive surroundings.

Isobusbar® “IMT –series”

Composition:

Conductors:
- The conductors are profiles and/or copper bars with a purity greater that 99,9%.
- ETP 99,9 DIN 1787-46433-40500.

Connection holes:
- Adapted for intensity and temperature-rise.
- Based on the DIN 46206 and 43673T1, connecting copper bars electrically/mechanically.

The DIN standards indicate the quantity of bolts according to the intensity.
Double insulation:
1. First: medium voltage heat-shrink tube.
2. Second: the enclosure of the ISOBUSBAR® cast resin products consists of a polymerised synthetic resin (polyester or epoxy), reinforced with mineral charges.

(Example of 1 phase)

Isobusbar® “IMT –series”

After the first isolation, the conductors are inserted in a special isolating material. It consists of special polymerised resin (polyester or epoxy) reinforced with mineral charges of determined granulometry and inflammable materials.
Our design offers very good thermal characteristics and is in full compliance with the applicable standards. Moreover it ensures excellent mechanical resistance and short-circuits withstanding and a IP-66 degree of protection (in accordance with IEC-60529 standard).

Fonctions of the resin block:
- short-circuits withstanding (dynamic effects)
- limit the spread of fire
- fixing the phases together

Threaded rods for fixing the metal enclosure
**Standards:** IEC60271-200 and IEC62271-1

**Test specifications:**
- Type test: performed in accredited laboratories according to ISO17025.
- Routine tests: dielectric strength and insulation level, performed on all components manufactured.

**Metal enclosures:**
- Type test: Around this cast resin enclosure, the busbar has a housing manufactured made off anodized aluminium to protect the system from outside mechanical aggressions and reducing the electro-magnetic field. It is available in any RAL colour, through polyester painting. Any other finished form is available under request.

*Acting as PE conductor and by means of its earth connection it is a personal protection against electrical accident.*

**Isobusbar® “IMT –series”**
non segregated busbar

- ventilation openings
- mounting profiles

**Isobusbar® “IMTS –series”**
segregated busbar

Busbars by Nexans
Temperature-rise limits according the standard IEC 62271-1 (for conductors & enclosure):

The test material was setup according to this standard. Ambient temperature: max. 40 °C.

Temperature-rise limit: 40K

Temperature-rise limit: 65K

Also to consider: the reduction factors related to temperature and effects of the proximity to any electrical conductors.
Isobusbar® “IMT & IMTS –series”

Fire resistance according with the standards: IEC60439- 1 & 2:
- Resistance to abnormal heat and fire.
- Verification of resistance to flame-propagation.
- Verification of fire resistance.

Test result after 4 hours of plain fire → no flame propagation:

Side A

Side B

All tests are conducted in accredited laboratories according to ISO17025 standard.

Isobusbar® “IMT –series”

Modelpieces:
- straight line:

degree of protection: IP66
- elbow 90°, T- and Z-pieces, horizontal and vertical

All dimensions and construction details to be defined for your project.
Isobusbar® “IMT –series”

Special flanged ends (terminations to transformers, panels, switchgears …) and joints:

Note:

In this brochure we show the standard elements. But it’s possible to manufacture any custom-made pieces specially designed for your project. Our technical department will study each request for special pieces and check the possibilities of manufacturing. All dimensions, lengths, weight ... can be requested according your project.

Moreover, we can supply apart from the busbars, all necessary accessories such as flexibles, mounting brackets, expansion units, fire barriers, coupler boxes,… and others.

Technical assistance during the installation works on site is available under request.
Examples of realisations:
Additional catalogue information on power cable accessories is available by contacting us at the address below.