# Installation manual

A simple solution for efficient heating in households, for dry or wet installation

<table>
<thead>
<tr>
<th>LARX Carbon Kit type</th>
<th>Width [m]</th>
<th>Length [m]</th>
<th>Area [m²]</th>
<th>Power per area [W/m²]</th>
<th>Power [W]</th>
<th>Electrical resistance [Ω]</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARX-CHK180W050S160L</td>
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<td>0,8</td>
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<td>180</td>
<td>900</td>
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</tbody>
</table>

LARX Carbon Kit heat power tolerance is 10 %.

## Package content

- LARX heating film (1 stripe) with power cables
- Installation manual and Warranty certificate
- Switchboard sticker
- Round insulation stickers for cutting edge after shortening
Mandatory installation conditions

- LARX Carbon Kit heat must be installed and used according to the valid local standards and requirements in that country.
- LARX Carbon Kit heat is designed to be installed dry or wet way. It must be fixed to the ground in a suitable way to prevent its displacement.
- Inside the floor construction under LARX Carbon Kit heat must be a waterproofing to prevent raising humidity to LARX Carbon Kit heat. Humidity of the ground must be less than 2 %. LARX Carbon Kit heat must not be installed on constructions with excessive humidity.
- The ground for installation of LARX Carbon Kit heat must be flat, without unevenness and dirt. LARX Carbon Kit heat can't be installed bent.
- LARX Carbon Kit heat must be protected against damage during installation and after.
- Individual LARX Carbon Kit heat strips must not cover each other. LARX Carbon Kit heat can't be installed over expansion joints and under door.
- LARX Carbon Kit heat can be cut every 20 cm following cut markings and then insulated. It is not allowed to make holes in it.
- It is not possible to place LARX Carbon Kit heat under non-movable furniture and bathroom equipment.
- LARX Carbon Kit heat can't be installed in temperatures under 3 °C and exposed to temperatures over 60 °C.
- LARX Carbon Kit heat can't be covered by flooring or a barrier with thermal resistance higher than 0,14 m²K/W.
- LARX Carbon Kit heat must be over the entire surface covered by a PE film with minimum thickness 0,2 mm and minimum overlap 10 cm. The PE film must fulfil the local standards for electrical isolation (protection class II).
- The installation must allow electrical disconnection of all poles of LARX Carbon Kit eco, the distance of the disconnected contacts must be at least 3 mm.
- The power circuit must have an RCD with Iₐn = 30 mA.
- Every supplier and user must be instructed to avoid drilling, digging or nailing into floor with LARX Carbon Kit heat.
Flooring over LARX Carbon Kit heat must be protected against unprofessional disassembly. During installation can be used only construction chemistry suitable for floor heating.

In the switchboard of the heating system must be placed filled and signed Warranty certificate. In the switchboard must be glued a label indicating floor heating.

User must be instructed how to operate LARX Carbon Kit heat.

Installation and use of LARX Carbon Kit heat must fulfil conditions listed in this manual. Other installation and use can be dangerous, and the warranty is void.

**Connecting two LARX Carbon Kits eco**

**Parallel connection**

Standard way of application, full power, any number of strips up to 10 A, when connecting in parallel different strip lengths can be connected

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\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots
\]
Recommended minimal floor thermal insulation

<table>
<thead>
<tr>
<th>Floor positioning</th>
<th>Polystyrene thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>On terrain</td>
<td>60 mm</td>
</tr>
<tr>
<td>Above cellar</td>
<td>60 mm</td>
</tr>
<tr>
<td>Above heated space</td>
<td>20 mm</td>
</tr>
<tr>
<td>Above exterior</td>
<td>100 mm</td>
</tr>
</tbody>
</table>

Application directly under floating flooring

Floor composition

1. On a cleared floor without unevenness place an acoustic insulation (e.g. hobra). It serves also as a thermal insulation. The LARX Carbon Kit heat power cables are laid into grooves in this acoustic insulation.
2. Measure the electrical resistance according to the Warranty certificate.
3. If required, LARX Carbon Kit heat can be shortened at the end without cables. Cut by scissors following cut markings. Never cut into black areas. After cutting it is necessary to re-insulate the cutting edge at the place of copper bars – use round stickers.

LARX s.r.o., Kaprova 42/14, 110 00 Praha 1 | www.carbon-film.com | info@carbon-film.com
4. Lay LARX Carbon Kit heat in the designated place and fix it against displacement in a suitable way (e.g. silver tape). Never use nails or screws.

5. Prepare grooves in the acoustic insulation and lay the power cables into them. The cables are not allowed to cross and must be fully imbedded.

6. Professional person with the electrician certificate connects LARX Carbon Kit heat inside a wiring box or a thermostat.

7. In the case of more LARX Carbon Kit heat in one room it is possible to connect them in series or in parallel (according to the required power) up to maximum current 10 A (2 300 W). The best way to connect them is inside a wiring box using e.g. WAGO clamps.

8. For floor heating it is necessary to place a floor temperature sensor of the thermostat. It must be placed into a groove directly under LARX Carbon Kit heat.

9. Cover all LARX Carbon Kit heat with a PE film with minimum thickness 0,2 mm and minimum overlap 10 cm.

10. Measure the electrical resistance according to the Warranty certificate and draw the position of every LARX Carbon Kit eco, cable, connection and device.

11. Check everything and lay flooring with click system according to instructions of the manufacturer. Be careful to avoid damage of LARX Carbon Kit heat.

**First heating**

- On the first day set the floor temperature to current room air temperature (but maximum 18 °C).
- In the following days increase the floor temperature gradually by 2 °C per day up to 28 °C.
- Keep the floor temperature at 28 °C for next three days.
- Then lower the floor temperature by 4 °C per day to 20 °C.
Application under screed (anhydrite / concrete)

Floor composition

Any flooring / tiles (certified for floor heating)
Possible tile glue
Anhydrite / concrete > 45 mm
PE film 0,2 mm
LARX Carbon Kit heat

Installation procedure

1. LARX Carbon Kit heat is usually laid on a thermal insulation (polystyrene).
2. Measure the electrical resistance according to the Warranty certificate.
3. Lay LARX Carbon Kit heat in the designated place and fix it against displacement in a suitable way (e.g. silver tape). Never use nails or screws. Secure against displacement also the power cables.
4. Professional person with an electrician certificate connects LARX Carbon Kit heat inside a wiring box or a thermostat.
5. In the case of more LARX Carbon Kit heat in one room it is possible to connect them in parallel up to maximum current 10 A (2 300 W). The best way to connect them is inside a wiring box using e.g. WAGO clamps.
6. Cover all LARX Carbon Kit heat with a PE film with minimum thickness 0,2 mm and minimum overlap 10 cm.
7. For floor heating it is necessary to place a floor temperature sensor of the thermostat. It must be placed on the PE film directly above LARX Carbon Kit heat and must be secured against displacement.
8. In bathrooms LARX Carbon Kit heat must be covered by a grounding net laid on the PE film and overlapping LARX Carbon Kit heat. The grounding net must fulfil the local standards and must be grounded (PE), e.g. galvanized welded mesh, mesh 12.7 mm, wire diameter 1.05 mm.

9. Measure the electrical resistance according to the Warranty certificate and draw the position of every LARX Carbon Kit heat, cable, connection and device.

10. Check everything, lay the separation film and pour the screed according to the manufacturer’s technological procedure. The minimum thickness of anhydrite or concrete above LARX Carbon Kit heat is 45 mm. Be careful to avoid damage of LARX Carbon Kit heat.

**First heating**

› On the first and second day set the floor temperature at 20 °C. From the third day add 5 °C every day up to 35 °C.

› The next day after it has reached 35 °C start to lower the floor temperature by 5 °C per day to 20 °C.

› If the first heating is done in winter, it is recommended to start at 15 °C on the first day and on the next day increase the floor temperature to 20 °C.
Standard way of switchboard connection

1. Circuit breaker
2. RCD (I_{an} = 30 mA)
3. Grounding net (rooms with higher moisture – e.g. bathrooms)
4. LARX Carbon Kit heat
5. Thermostat for electric floor heating
Heating regulation

Floor heating LARX Carbon Kit heat must be controlled by a thermostat with a floor sensor. The floor sensor must limit the maximum floor temperature in living rooms according to the local standards.

The current through the thermostat must not exceed 80% of the nominal maximum current indicated on the thermostat.

A suitable regulation is at www.carbon-film.com/regulation

Warranty

Supplier of LARX Carbon Kit heat provides a warranty on its operation for 2 years. The warranty period starts from the date of its installation, but not later than 6 months from the date of its sale.

Also, these conditions must be fulfilled:

 › Mandatory installation conditions and installation procedures in this manual have been fulfilled without an exception.
 › Installation has been done by a professional person with the electrician certificate.
 › Filled and signed Warranty certificate is submitted.
 › LARX Carbon Kit heat delivery note or invoice is submitted.
 › LARX Carbon Kit heat has not been damaged by its user or a third person.

The Complaints procedure is at www.carbon-film.com/complaints-procedure

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For more information

www.carbon-film.com/larx-carbon-kit
info@carbon-film.com