



## Installation of optical fiber connection – additional information for laying a conduit pipe and microducts.

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Confidentiality Unrestricted  
Our reference Proximus NEO/OPP

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## General

Dear customer,

This document serves as a guideline for you or your installer when laying the conduit pipe, installing microducts and installing a rack for an optical VHR connection.

The connection to Proximus' optical fiber network is accomplished with an optical fiber microcable which Proximus brings in through microducts which you have laid beforehand from the building line up to the rack in the technical room where your optical equipment is installed.

Based on all elements such as the size and type of building and the site plan, Proximus will determine on which side the lead-in cable should enter the building and what type of connection should be used.

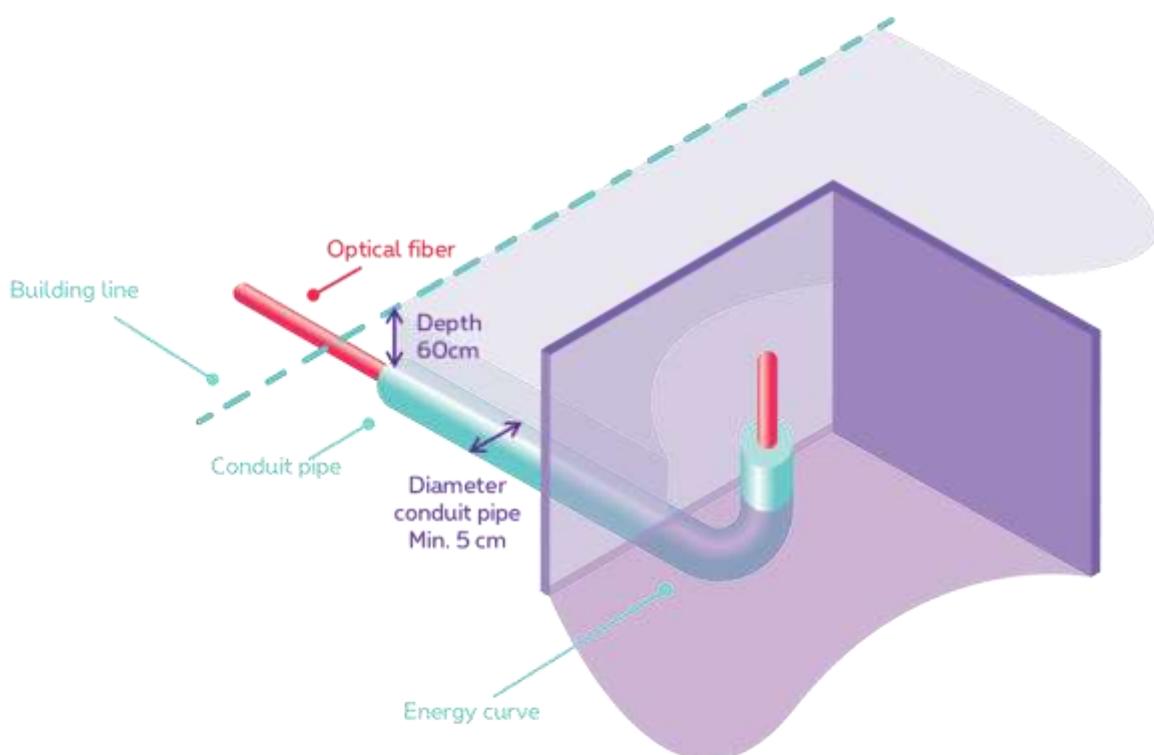
These activities must have been carried out when Proximus comes to install the optical lead-in cable and perform the splicing work of the optical fibers.

*NB: Proximus takes utmost care in preparing the content of these technical guidelines but cannot be held responsible for any errors or inaccuracies. Any person who performs work or has work performed on the basis of these technical guidelines is responsible for that work and for the materials used along with the installation conditions of the supplier of the materials.*

## 1. Laying of the conduit pipe

To protect the lead-in cable and microduct the cable is always placed in a conduit pipe. This also makes it easier to perform future extensions/repairs without having to carry out digging works again.

The path of the conduit pipe runs perpendicular to the building line at a depth of at least 60 cm, measured from the top of the conduit pipe to the ground level. The ducts are brought in via a smooth empty conduit pipe with a diameter of 50 mm. The conduit pipe departs from the building line and ends at the energy curve connector. Proximus requires a separate pipe with a minimum diameter of 50 mm at the level of the power elbow connector.



### Important!

As a customer, you are only entitled to carry out work on your private property. Before the start of the digging works, always check the location of the other utilities to prevent damage. If necessary, take a few soundings along the path of the new lead-in.

Mark the end of the pipe on the street side, for example by means of a small post.

Proximus is not responsible for damage resulting from the digging works you perform on private property.

Digging works on public property are always carried out by Proximus, only after obtaining the legal permits and the laying plans from the other utility companies and public services.

## 1.1 Water and gas sealing of the lead-in

Every lead-in and perforation is expertly sealed to prevent water or gas infiltration.

The sealing between the wall and conduit pipe and the sealing in the conduit pipe between the installed ducts is carried out by your installer. For this, various toolkits based on PUR foam, T-dux and others are available on the market.



The water and gas sealing in the duct around the micro cable is carried out by Proximus after the installation.

If no power elbow connector is provided, the sealing should preferably be applied to the outside of the wall to prevent gas and water infiltration in hollow walls.

### PLEASE NOTE:

Also, temporarily seal all pipe ends hermetically with a suitable seal pending the installation of the cable. This is in order to prevent sand infiltration so there are no obstructions when the cable is blown through the duct.

Applying a wall pipe hole seal is a legal requirement.

Proximus is not responsible for any water or gas damage as a result of an inadequate installation by your installer.

## 2. Microducts

### 2.1 What are microducts?

Microducts are small flexible pipes through which Proximus blows its optical fiber. The inside wall contains guide ribs which minimize friction and ensure optimal air flow in the duct during the blowing of the cable.

For the installation of the optical cable inside the building, we require that low-smoke microducts with a diameter of 12--2 mm be installed so they are UV-resistant.

For the installation on the site outdoors it is advisable that multiple ducts (e.g. 4 x 12-2 mm) are installed in the conduit pipe.

Each manufacturer also offers the required plugs and tools to seal these ducts safely, to install them correctly and, if necessary, to connect them. (e.g. an outdoor duct to an indoor duct)

(See the example below of the Gabocom Speedpipe system)



Type Indoor



Type Outdoor

## 2.2 Conditions governing the installation of microducts

Install cable ladders and/or cable trays (at least 5 cm wide) in the building to support the lead-in cable from the place where the cable enters the building to the technical room. This cable tray may be shared with other utility companies.



The pulling of the ducts in the technical shaft and cable trays must be done following the manufacturer's rules and account must be taken of the microduct's characteristics (bending radius and pulling force)

Limit interruptions of the microduct to a minimum. If this is necessary after all, make the connection according to the manufacturer's guidelines. This must not present an obstacle during the blowing of the lead-in cable.

The microduct must be ~~affixed~~ with due care in the technical shaft at regular intervals using the requisite clamps, without any deformation occurring in the duct. It is advised to affix at least one attachment point per meter.

Allow a sufficiently large radius when making the bends. Too small ~~a~~ radius results in problems during installation and causes attenuation (bending) of the fiber cable. The manufacturer's guideline is to have a radius of at least 120 mm.



Seal all pipe ends hermetically with a suitable plug, pending the installation of the cable. For this, use the right seals and connectors of the manufacturer.

### Please note!

All perforations (in the floor and wall) must be made fire-tight in compliance with the statutory fire safety provisions. The installation must be provided with grounding in accordance with the provisions of the General Regulations on Electrical Installations.

### 3. The technical room

The technical room is the connection between the building and Proximus' optical fiber network. A 19-inch rack is installed in the technical room. This does not necessarily have to be the first room into which the lead-in cable enters from the outside. In practice it is not always possible to provide for a separate room. In that case, a shared room or open space may be used.

#### 3.1 Prerequisites

- The room must have the following minimum dimensions: 1.5 x 1.5 x 2.4 (height) meters
- There must be adequate lighting.
- Simple air circulation must be possible, for instance by means of fitting grids.
- The floor load may be up to 270 kg per square meter.
- Vibrations caused by certain pieces of equipment in operation are best avoided as much as possible.
- Air humidity must be limited to a minimum, suitable for the installation of electronic equipment.

#### 3.2 The 19" equipment rack

Proximus recommends a 19-inch rack as a connection point or indoor distribution frame. The rack is attached with four bolts to a free wall of the technical room so the middle of a casing is at 160 cm height. Suppliers must provide detailed instructions and drawings for this. Depending on the content and size of the equipment, a standing model can also be used.

The requisite power 230V power outlets must be accessibly installed in accordance with the provisions of the General Regulation on Electrical Installations.

Wall cabinets must preferably have a see-through glass door with a lock and handle.

Cable introduction is possible along the top and bottom sides.

Equipped with 4 x 19-inch profiles; the minimum depth of the rack is 80 cm.



If you have any questions during the works, please contact your Explore Implementation Officer.

