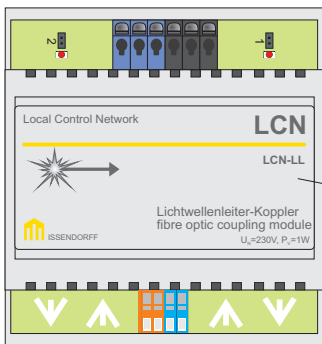


LCN-LLG: coupling module for glass fibre cables with a range up to 2km.

LCN-LLK: coupling module for plastic cables with a range up to 100m.

The modules **LCN-LLG** and **LCN-LLK** are fibre optic coupling modules for building installation with LCN-Bus technology.

The LCN-LLG/K serves as an extension and electrical isolation in two-wire bus systems. To connect a fibre optic coupling module LCN-LLG or LCN-LLK onto the LCN-Bus, an isolation amplifier LCN-IS is also required. Up to 15 isolation amplifiers and/or LL-couplers can be directly switched together in each distribution box.

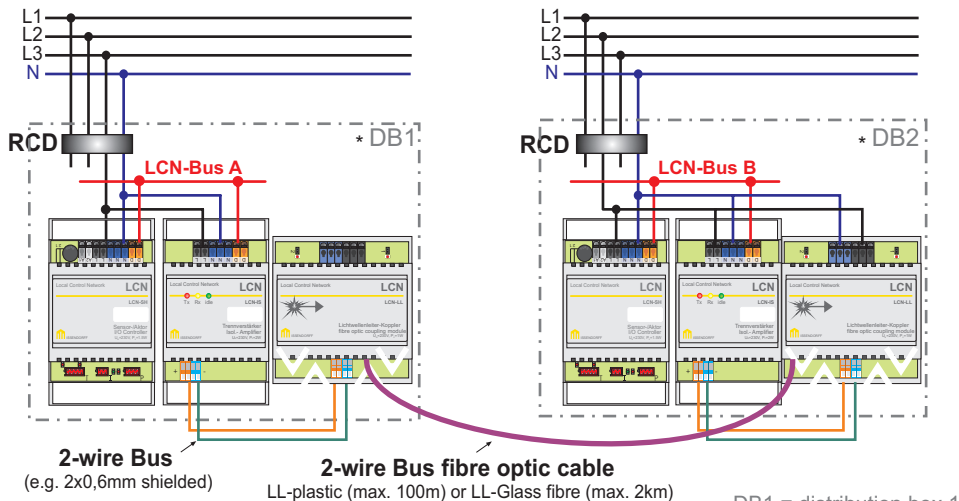


Please remove the housing cover when connecting the fibre optic cable!

housing cover

How it functions

The fibre optic coupling modules are passive building groups, that are not shown in the LCN-PRO (the same as the LCN-IS). A conversion of electrical signals into light signals is carried out in the two-wire bus and vice versa. Through this, an electrical



isolation is guaranteed. This is necessary for example in buildings with several feeds or to avoid danger of overvoltages.

Connecting the fibre optic cable LCN-LLK:

1. Step "cutting": Cut the plastic fibre optic cable with a razor blade or a **very sharp** knife. Check the cut end from the front: Has the fibre optic cable been cut clean and smoothly? Was the cut vertical? Is the cut surface neat and round?



illustration

2. Step "polishing": take a clean sheet of paper and place the fibre optic cable vertically onto it. Now rub it with an evenly pressure over the paper in the form of a figure eight: After repeating 10 times, check the cut surface again from the front: Is it nice and smooth all over? Otherwise repeat the polishing again.

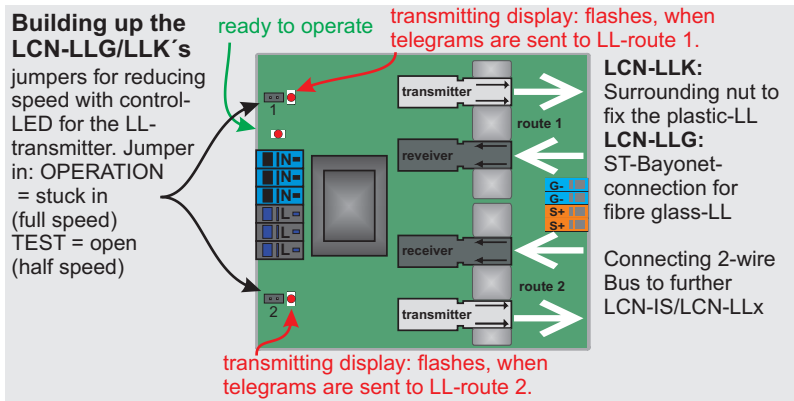


illustration

3. Step "connecting": Finally lead the prepared cable end as far as possible into the coupler and tighten the sleeve nut.

The transmitter on the one LCN-LLK module must be connected with the receiver from the other LCN-LLK module. With the LCN-LLK you can determine the wire order very simply, because the transfer is carried out with a visible light. Supply both LCN-LLK's on the transfer route

illustration



with 230V and short circuit the signal input (2 wire bus): now all LWL transmitters will light up. Stick the lighted cable ends into each receiver.

Notes:

Fibre optic coupling modules can be operated without LCN-IS as repeaters (booster amplifiers).

In one segment there is only one 2-wire bus allowed and **not 2 independent** buses! Please see the graphic on page 3 in the installation guide of the LCN-IS.

Over the data connection (2-wire bus), up to 15 LCN-IS, LCN-LLK / -LLG's can be coupled together in each distributuin box. You will find further informations over the 2-wire bus in the installation guide from the LCN-IS.

Laying fibre optic cable:

The reliability of the whole bus system, depends on the careful laying of the fibre optic cables!

That's why you should be aware of the following points:

Fibre optic cables are not as mechanically robust as normal cable: When pulling into cable channels etc., avoid damaging and pulling round tight corners.

Every tight bend reduces the range. That,s why you should leave it lying loosely, in corners and bends! Even in sharp corners the bending radius should not be less than 100 mm.

This applies especially in distribution boxes: It's better to leave the fibre optic cable a little longer, than to lead it to the LCN-LLG / LLK pulled tightly. You should also cut out a small opening from the housing of the LCN-fibre optic coupling module. Always lay fibre optic cables in pairs (for directions to and from) or use cable with 2 fibers.

Important: test operation

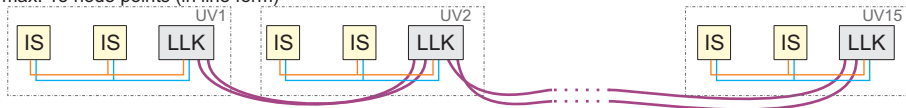
Pull out the test plugs for the speed reducing from all fibre optic coupling modules (see illustr. on page 3). Go into the LCN-Bus with the LCN-PRO let all of the modules be listed.

When all modules are found, the LL-connections are okay. Replace the test plugs; The LL-routes have a power reserve of 50% now and are safe against temperature and aging for decades.

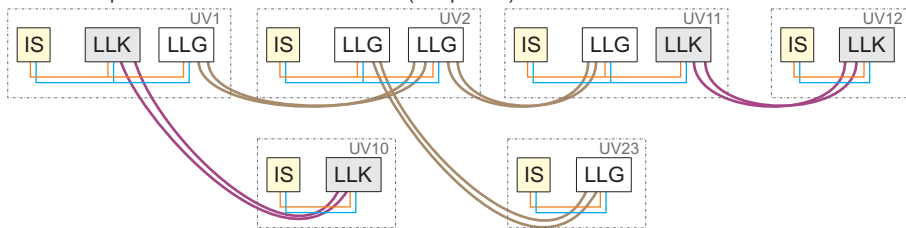
Topology (construction variations):



max. 15 node points (in line form)



max. 3 node points with more than one LCN-LLx (star pattern)



Technical data:**Glass fibre coupler LCN-LLG**

plug connection:	Typ: ST (bayonet)
fibre optic:	Multimode-fibre: 50/125µm & 62,5/125µm; type damping 2,5dB/km
wavelength:	820nm (invisible Infrared light)
range:	2 km

Plastic coupler LCN-LLK

connection:	cable is fastened with sleeve nut
fibre optic:	POF 980/1000 (1 mmø); typ. damping 230dB/km
wavelength:	650nm (visible, red light)
range:	max.100m when carefully layed with LCN-LK, otherwise 50m

Test operation

test plug:	half the sending power (-3dB) when plug removed
repeater function:	Max. 15 couplers per fibre optic cable, switchable in a row

Important note:

Despite its extensive functionalities, the LCN system is simple to install and programme: It's all in the hands of the electrician. However a **training course is necessary for every electrician**, who installs this system. The direct users support over the telephone hotline, is only free of charge and open to installers who have taken part in a training course. LCN-Hotline Rufnummer 05066 998844

Technical data**Connection**

power supply:	230VAC \pm 15%, 50/60Hz (110VAC available)
powerconsumption:	<2W
terminals/wire type:	screwless, solid max. 2,5mm ² or fine wire with wire-end sleeves max. 1,5mm ² loop through current max. 16A

Two-wire Bus

terminals/wire type:	screwless, solid or fine wire 0,5-1,5mm ² (shielded)
cable length:	max. 50m (all together, connection to LCN-IS)
participants:	max. 15(LCN-IS / -LLK / -LLG's)

Installation:

operating temperature:	-10°C to +40°C
air humidity:	max. 80% rel., non condensing
environmental conditions:	Use as stationary installation according to VDE632, VDE637
protection art:	IP 20
dimensions (BxDxH):	85,5mm (5HP) x 92mm x 66,5mm
installation:	DIN rail mounting 35mm (DIN50022)

Technical information and images are non binding. Changes are reserved.

Technical hotline: +49 5066 998844 or www.LCN.de