![Legrand logo]

KNX/IP gateway with router

CONTENTS   Page

1. USE

The IP/KNX router is used to connect several KNX lines via computer networks using IP (Internet Protocol). This device also offers the benefit of simultaneous access to the BUS line from a PC, tablet or smartphone. Equipped with an RJ 45 socket so it can be connected to the computer network, and a KNX connector for connection to the KNX bus, this router can be accessed locally via the LAN or remotely.

It requires a dedicated power supply which can be POE (Power over Ethernet) or a non-filtered BUS power supply, 29 VDC.
The IP router has the following characteristics:
- Enables simultaneous connection of 4 clients
• Direct access to the KNX installation from any access point on the IP network (KNXnet/IP)
• Fast communication between KNX lines, zones and systems (KNXnet/IP)
• Communication between buildings and sites
• Telegrams filtered and routed by:
   - individual address
   - group address
• LEDs for displaying:
   - service
   - KNX communication
   - IP communication
• Simple configuration with ETS 3 or later version
• Easy connection to monitoring systems

2. TECHNICAL FEATURES

2.1 Climatic features
• Environmental operating temperature: -5 to +45°C
• Storage temperature: -25 to +70°C
• Relative humidity (non-condensing): 5% to 93%
• Weight: 105 g

2.2 Electrical features
• KNX/BUS power supply: 29 V ⎓
• Auxiliary power supply:
   - PoE (Power over Ethernet) 48 V ⎓ (in accordance with standard IEEE 802.3af) max. 0.8 W
   - external power supply 24 V~/⎓ (12…24 V~, 12...30 V ⎓) max. 1.7 W (57 mA in 24 V ⎓)
• Recommended power supplies:
  29 V ⎓ (ahead of reactor) via a KNX power supply Cat. No. 0 035 12/04

> **Caution:** We recommend using an external safety extra low voltage for the IP router only.

Electricity consumption
• 10 mA KNX/BUS absorption
• Auxiliary power supply: max. 1.7 W (57 mA in 24 V ⎓)

Network communication
• Ethernet: 10BaseT (10 Mbps)
• Internet protocols supported: ARP, ICMP, IGMP, UDP/IP, DHCP, AutoIP
• KNXnet/IP depending on the characteristics of the KNX system: core, routing, device management
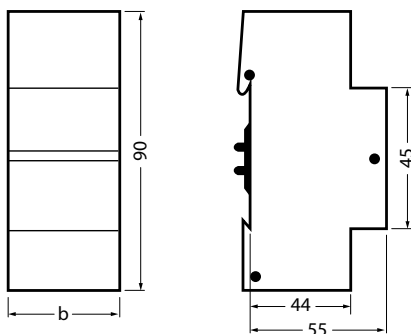
CONTENTS

2. TECHNICAL FEATURES (continued)

A KNXnet/IP driver is available for ETS3. When this driver is installed, the ETS3 software can be used with IP router Cat. No. 0 026 38. This function includes downloading the device configuration via the BUS and ETS3 group control function.

> **Note**
> The KNX Association decided that IP routers would not support BUS control.
> The ETS3 driver does not currently support local downloading.

> **Note**
> Once the ETS3 driver has been installed and the IP interface or IP router selected as the communication interface, a Windows message may appear and indicate that a class is not recognised.
> In this case, install Microsoft .Net Framework, available for download on the Microsoft software update site (file size: approx. 25 MB).
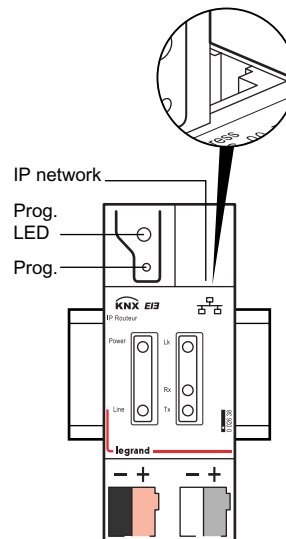
3. OVERALL DIMENSIONS

b = 2 U
1 U = 18 mm

4. CONNECTION

0 035 04/12

29 V= KNX

4 x (Ø 0.6 < —— < Ø 0.8)
8 mm

5. OPERATION

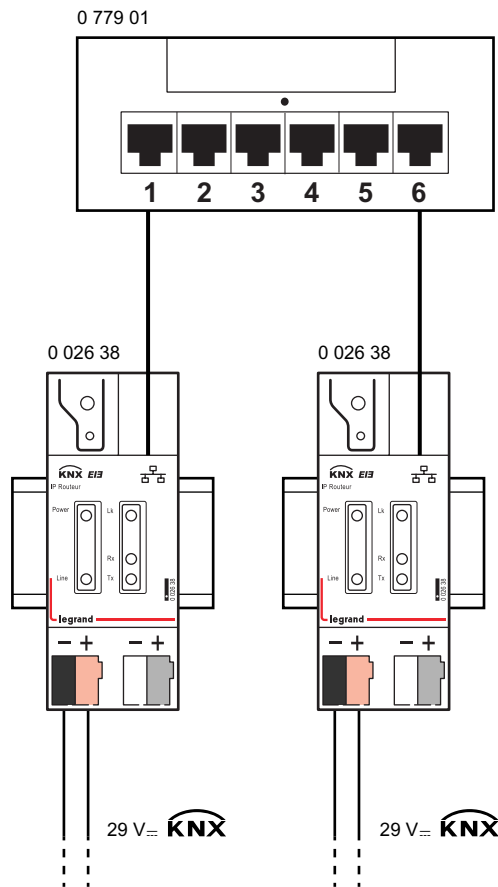IP network
Prog. LED
Prog.
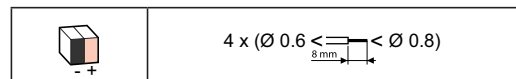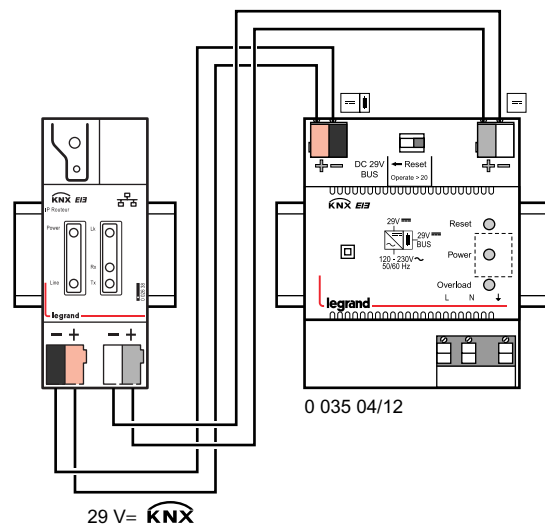
Control elements
1 programming button: for toggling between normal operating mode and addressing mode
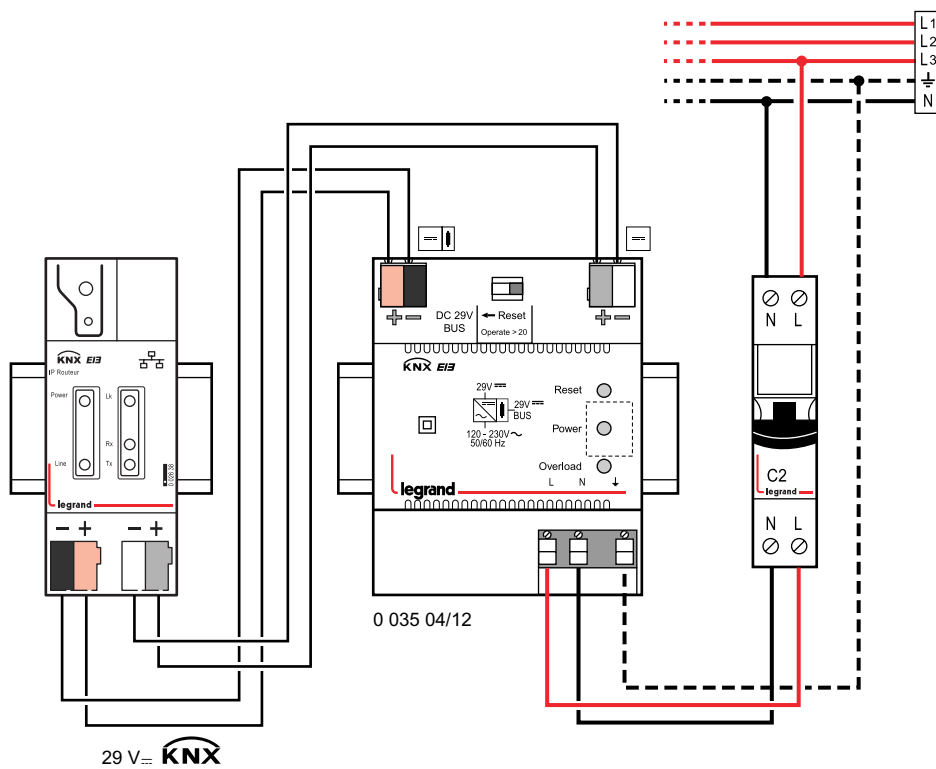
Display elements
• 1 green LED: device ready (ON)
• 1 yellow LED: communication on the BUS LINE
• 1 green LED: Ethernet link available signal (Lk)
• 1 yellow LED: data being received from Ethernet (Rx)
• 1 red LED: data transmission to Ethernet (Tx)
• 1 red LED: for controlling the BUS voltage and displaying the selected mode using the programming button

---

CONTENTS

5. OPERATION (CONTINUED)

■ **Power supply with PoE switch**

0 779 01

0 026 38

0 026 38

29 V⎓ KNX

29 V⎓ KNX

■ **Power supply with modular power supply Cat. Nos. 0 035 04/12**

L1
L2
L3

N

DC 29V
BUS

Reset
Operate > 20

29V⎓
29V⎓
BUS

120 - 230V~
50/60 Hz

Reset

Power

Overload

L   N

C2

N   L

N   L

0 035 04/12

29 V⎓ KNX

5. OPERATION (CONTINUED)

IP router acting as a line/zone coupler (KNXnet/IP routing).

It is completely logical to use the existing computer network to establish communication between BUS lines in non-residential buildings. There are many advantages to this method: fast communication between KNX lines, extension of a KNX system outside the building using LAN and WAN connections, direct transmission of KNX data to any network user, remote KNX configuration from any network access point.

The IP router connects the KNX BUS lines logically by sending KNX telegrams between them via a computer network, but separates them galvanically. Each bus line can thus be operated independently of the others.

The IP router can be used as a line or zone coupler in existing KNX networks, and also in new KNX networks. The IP router manages a filter table which determines BUS telegrams sent or blocked from and to the BUS line, which reduces the BUS load. The filter table is generated automatically by ETS (KNX tool software) during configuration and system start-up.

The IP router physical address assigned by ETS automatically determines the IP router function (line or zone coupler). This definition complies with the following assignments:

Function	Line
Zone coupler	Main line 1-15
Line coupler	Line 1-15

Note
When assigning the physical address, ensure that the IP router and line couplers are given the correct physical address in the topology (fig. 1: IP router acting as a line/zone coupler).

⚠ Comply with the following rules:
Rule 1:
As a general rule, an IP router is used as a line or zone coupler. The physical address is in the format x.y.0,
where x=1…15, y=1…15.
Rule 2:
If an IP router is used as a zone coupler with the physical address x.0.0, no other IP router with the line coupler address x.y.0 (y=1…15) must be placed underneath in the topology (fig. 2: IP router acting as a zone coupler).
Rule 3:
If an IP router is used as a line coupler (for example, with the physical address 1.2.0), no other IP router must be used with a higher-level zone coupler address (for example: 1.0.0) in this installation (fig. 3: IP router acting as a line coupler).

Note
To operate smoothly as a line coupler or as standard using KNXnet/IP routing, the IP router must have LAN network components that support IP multicast.
In particular, network/LAN routers must be configurable and configured respectively in order to send IP multicast datagrams.
The multicast address IP 224.0.23.12 has been specially reserved for this purpose for KNXnet/IP at international level.

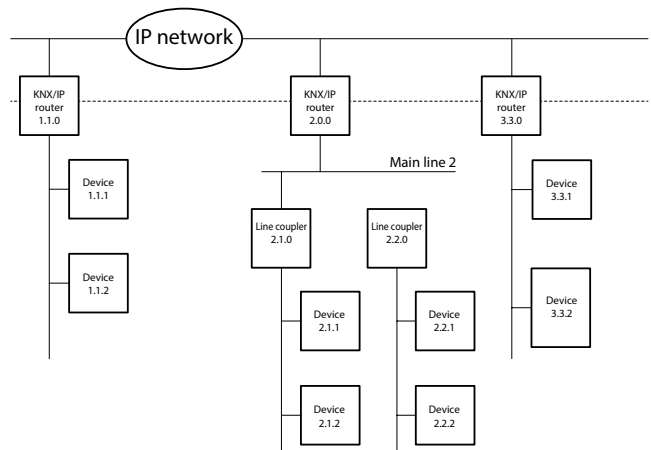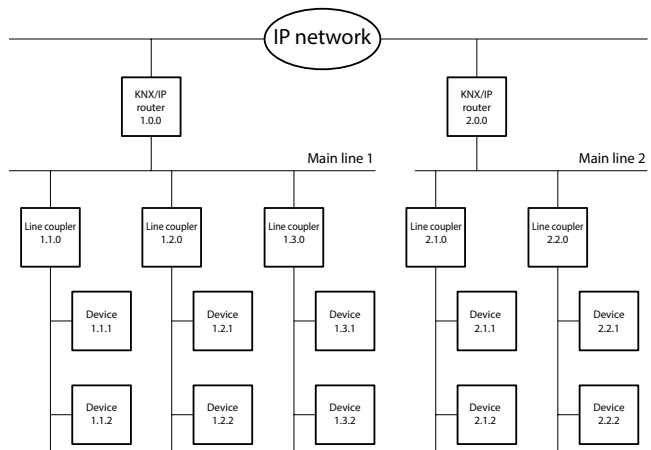**Fig. 1:** IP router acting as a line/zone coupler
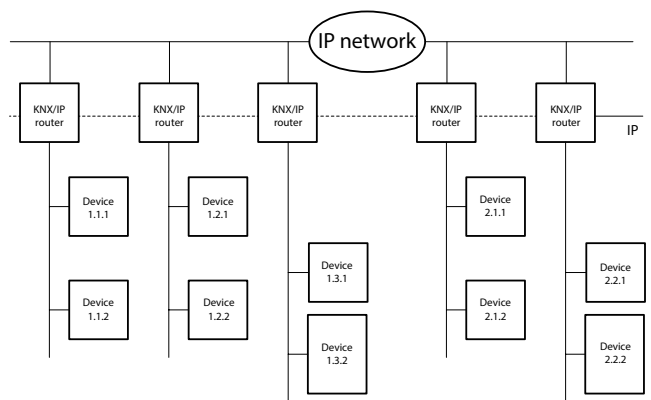

Fig. 2: IP router acting as a zone coupler

Fig. 3: IP router acting as a line coupler

Technical data sheet: S000081864EN-1

Updated: 01/07/2014

Created: 08/10/2013

Ll legrand

CONTENTS

4/7

5. OPERATION (CONTINUED)

The IP router Cat. No. 0 026 38 provides up to 4 KNXnet/IP tunnel connections. It enables simultaneous connections of 3 ETS configuration PCs and a display PC (Legrand Supervision Software Cat. No 0 490 00/01/02/03/04)

> **Note**
> To establish stable communication via KNXnet/IPs links, the IP router must use a separate individual address for each KNXnet/IP network connection. These extra individual addresses must be different from the device individual address, and must not be used by any other BUS device. In ETS, these individual addresses must be reserved by proxy devices.

6. STANDARDS AND APPROVALS

Electrical safety
• Degree of pollution (in accordance with standard IEC 60664-1): 2
• Protection (in accordance with standard EN 60529): IP 20
• Protection class (in accordance with standard IEC 61140): III
• Overvoltage class (in accordance with standard IEC 60664-1): III
• BUS: safety extra low voltage (SELV) 24 VDC
• The device complies with standard EN 50 090-2-2

Electromagnetic compatibility
Compliance with standards
EN 61000-6-2, EN 61000-6-3 and EN 50090-2-2

Marking
KNX, EIB, CE

Electromagnetic compatibility
Compliance with EMC regulations (residential and commercial buildings) and low voltage regulations

> **Note**: All technical information is available at
> **www.legrandoc.com**

7. MAINTENANCE

Clean the surface with a cloth.
Do not use acetone, tar-removing cleaning agents or trichloroethylene.

> **Caution:** Always test before using other special cleaning products.

8. COMMUNICATION OBJECTS

The IP Router can be configured with ETS 3 or later versions.

> **Note**
> The IP Router can be reset to the default factory settings by pressing the programming button for more than six seconds when the operation voltage is turned on. The transition to the default state is indicated by a blinking programming LED. All parameter settings are deleted by this reset action.

The application program does not contain any communication objects.

8. COMMUNICATION OBJECTS (CONTINUED)

8.1 Parameter General

Parameter	Settings
Support of unconfigured interfaces	disabled **enabled**
By enabling this parameter RS232 interfaces with a topologically incorrect address can be supported allowing for configuration across several bus lines.	
Monitoring of bus voltage failure	disabled **enabled**
Bus voltage failure and bus voltage recovery can be announced via KNXnet/IP.	
Device name (max. 30 char)	IP Router 002638
This parameter determines the name (max. 30 characters) of the IP Router, which is used for easy recognition of the device when searched by a KNXnet/IP visualisation or the ETS.	

8.2 Parameter Routing Bus → IP

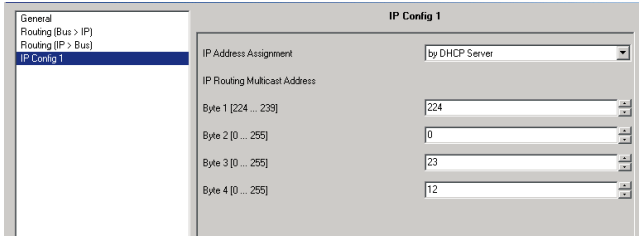| Parameter	Settings
Group telegrams of main groups 0 to 13	transmit all (for testing only) block **filter (normal)**
This parameter defines the filter function for group telegrams of main groups 0 to 13 received from the bus. If the default "filter (normal)" setting is selected the respective filter table entry is checked to determine whether the group telegram should be forwarded to the IP network.	
Group telegrams of main groups 14 and 15	block **transmit all**
This parameter defines the filter function for group telegrams of main groups 14 and 15 received from the bus. If the default setting "transmit all" is selected all group telegrams of main groups 14 and 15 are forwarded to the IP network. Otherwise all group telegrams of main groups 14 and 15 are blocked.	
Individually addressed and broadcast telegrams	transmit all (for testing only) block **filter (normal)**
This parameter defines the filter function for individually addressed and broadcast telegrams. If the default setting "filter (normal)" is selected the telegrams are filtered based on the individual address of the IP Router. Broadcast telegrams are always forwarded unless this parameter is set to "block". Independently from this parameter broadcast telegrams are always accepted by the IP Router itself.	
Telegram confirmation of group oriented telegrams	always **only if routed**
If this parameter is set to "always" group telegrams are confirmed even if they are not forwarded onto the IP network.	

8.3 Parameter Routing IP → Bus

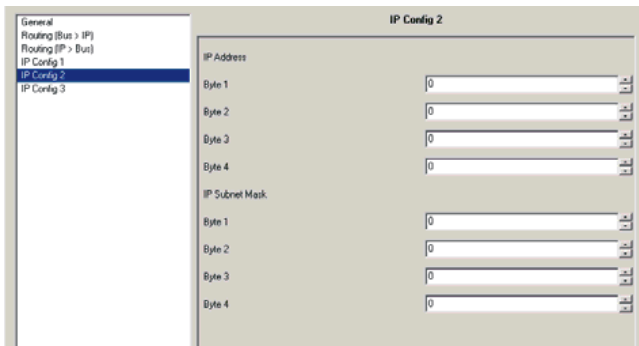| Parameter	Settings
Group telegrams of main groups 0 to 13	transmit all (for testing only) block **filter (normal)**
This parameter defines the filter function for group telegrams of main groups 0 to 13 received from the IP network. If the default "filter (normal)" setting is selected the respective filter table entry is checked to determine whether the group telegram should be forwarded to the bus.	
Group telegrams of main groups 14 and 15	block **transmit all**
This parameter defines the filter function for group telegrams of main groups 14 and 15 received from the IP network. If the default "transmit all" setting is selected all group telegrams of main groups 14 and 15 are forwarded to the bus. Otherwise all group telegrams of main groups 14 and 15 are blocked.	
Individually addressed and broadcast telegrams	transmit all (for testing only) block **filter (normal)**
This parameter defines the filter function for individually addressed and broadcast telegrams. If the default "filter (normal)" setting is selected the telegrams are filtered based on the individual address of the IP Router. Broadcast telegrams are always forwarded unless this parameter is set to "block". Independently from this parameter broadcast telegrams are always accepted by the IP Router itself.	

8. COMMUNICATION OBJECTS (CONTINUED)
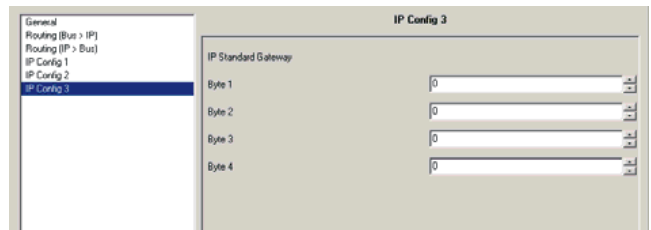
8.4 Parameter IP Configuration
IP Config 1

Parameter	Settings
IP Address Assignment	by DHCP Server manual input
This parameter determines the type of IP address assignment. By default the parameter is set to automatic assignment of the IP address by a DHCP server. If "manual input" is selected two additional tabs appear for manual input of the IP address, subnet mask, and the default gateway address.	
IP Routing Multicast Address Byte 1 [224…239], Byte 2 [0…255], Byte 3 [0…255], Byte 4 [0…255]	224.0.23.12
As EIB group telegrams IP allows transmitting a datagram to several recipients at the same time. This so-called multicast form of IP communication requires that sender and recipient are members of the same Multicast Group and use the same Multicast Address as target address. The Multicast Address 224.0.23.12 has especially been reserved for KNXnet/IP. For general use in a network multicast addresses ranging from 239.0.0.0 to 239.255.255.255 may be used. This parameter determines the IP Routing Multicast Address for KNXnet/IP Routing. KNXnet/IP Routing forwards bus telegrams to all IP Routers that use the same IP Routing Multicast Address. The factory default setting for the IP Routing Multicast Address is **224.0.23.12**. This is the Multicast Address that IANA assigned to EIBA and reserved for this purpose. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for bytes 2 to 4. Permissible values for byte 1 are values of 224 to 239, because only this address range may be used for multicast transmission. If other values are entered then KNXnet/IP. Routing will not work.	

IP Config 2

Parameter	Settings
IP Address Byte 1, Byte 2, Byte 3, Byte 4	0.0.0.0
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP address of the IP Router. The factory default setting for the IP address is **0.0.0.0.** This default value must be replaced by a valid IP address. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.	
IP Subnet Mask Byte 1, Byte 2, Byte 3, Byte 4	0.0.0.0
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP subnet mask used by the IP Router. The factory default value is **0.0.0.0.** This default value must be replaced by a valid subnet mask. Valid subnet mask values are e.g. 255.255.255.0 or 255.255.240.0. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.	

IP Config 3

Parameter	Settings
IP Standard Gateway Byte 1, Byte 2, Byte 3, Byte 4	0.0.0.0
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP address of the IP Standard Gateway. The factory default value is **0.0.0.0.** This default value may be replaced by a valid IP address. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte. The Standard Gateway transmits IP datagrams to IP devices with IP addresses outside of the local network. Use the predefined (invalid) IP address (**0.0.0.0**) if the device shall be configured without a Standard Gateway.	

CONTENTS