ABB i-bus® EIB / KNX

IP gateway, MDRC
IG/S 1.1, GH Q631 0067 R0001

The IP gateway IG/S is the interface between EIB / KNX installations and IP networks. Data can thus be exchanged between EIB devices and devices on the IP network.

The IP gateway can also be used as a line or backbone coupler and thereby use the LAN (10 Mbit) for the rapid exchange of telegrams between the lines/areas. Together with the iETS Software, EIB / KNX devices can be programmed from the LAN side via the IG/S.
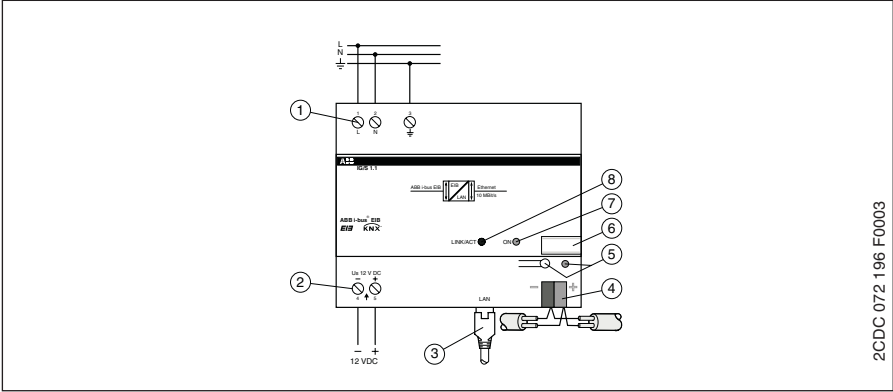
The IP address of the IG/S can be fixed or received from a DHCP server. The power supply can be carried out via 230 V AC and/or 12 V DC. The IP gateway is a DIN rail mounted device for insertion in the distribution board. The connection to the ABB i-bus is established via the bus connection terminal.

2CDC 071 130 F0003

Technical data

Power supply	– Operating voltage	230 V AC + 10 %/– 15 %, 45…65 Hz or 12 V DC (10…30 V DC)
	– Power consumption	ca. 22 mA at 230 V, ca. 130 mA at 12 V
	– Power consumption via EIB	< 250 mW
Operating and display elements	– Red LED and push button (5)	for entering the physical address
	– ON LED (7)	**Lights up green**, if the power supply is available and the device is ready for operation (max. after 140s); **Flashes green**, if the device starts up (after connecting the power supply) the network connection must exist
	– LAN/Link LED (8)	**Lights up yellow**, if the connection is available with an Ethernet network **Flashes yellow**, in the event of data traffic
Connections	– LAN	RJ45 socket for connection to an Ethernet network (10 BASE-T, IEEE 802.3)
	– 230 V AC	1 screw terminal for L 1 screw terminal for N 1 screw terminal for PE Wire range: finely stranded: 0.2 – 2.5 mm² single-core: 0.2 – 4.0 mm²
	– 12 V DC	1 screw terminal for + 12 V 1 screw terminal for 0 V Wire range: finely stranded: 0.2 – 2.5 mm² single-core: 0.2 – 4.0 mm²
	– EIB	Bus connection terminal (black/red)
Type of protection	– IP 20, EN 60 529	
Ambient temperature range	– Operation	0 °C … + 50 °C
	– Storage	– 25 °C … + 55 °C
	– Transport	– 25 °C … + 70 °C
Design	– Modular installation device, pro*M*	
Housing, colour	– Plastic housing, grey	
Installation	– on 35 mm mounting rail, DIN EN 60715	
Dimensions	– 90 x 108 x 64 mm (H x W x D)	
Mounting depth/width	– 68 mm/6 modules at 18 mm	
Weight	– 0.4 kg	
Mounting position	– as required	
Certification	– EIB- and KNX-certified	
CE norm	– in accordance with EMC guideline and low voltage guideline	

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Application program	Number of communication objects	Max. number of group addresses	Max. number of associations
IP Gateway /1	9	20	20

Circuit diagram

2CDC 072 196 F0003

1 230 V AC connection
2 12 V DC connection
3 Ethernet connection (LAN)
4 EIB connection

5 Programming LED
with programming button
6 Nameplate
7 Operating LED (On)
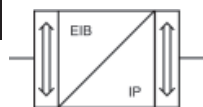**8** Display LINK/Act

Note

The programming is carried out with ETS from version ETS2 V1.2a onwards.

The IP gateway is supplied with a downloaded application program. Only the group addresses and parameters therefore need to be loaded during commissioning. If required, the complete application program can be loaded however.

When programming several devices, please note the programming sequence (see page 8).

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IP-Gateway /1

Selection in ETS2

– ABB
  └ System components
    └ Coupler

"General" tab

Physically addressed telegrams

Options: route (default setting)
          block

In the setting "route", all the telegrams from the EIB to the LAN and from the LAN to the EIB which are indicated in the line of the IG/S or should exit the line of the IG/S to the LAN are transmitted.

If physically addressed telegrams should not be processed by the IG/S, the option "block" can be selected. In this setting, it is not possible to send physically addressed telegrams (e.g. during programming) from the line below the IG/S to another line. In the same way, it is possible via the IG/S to prevent any devices being programmed in the line of the IG/S from the LAN (iETS). The IG/S itself can still be programmed in this setting.

Group telegrams from LAN to EIB

Options: filter
          route (default setting)
          block

The parameter "Group telegrams from LAN to EIB" defines whether telegrams with group addresses should be filtered, routed or blocked.

if the setting "filter" is selected, the telegrams with group addresses from the LAN to the EIB are filtered in accordance with the filter table.

> **Note:**
> The filter table must be generated by clicking on the 🗒 Filter button in the Project Design module prior to programming the IG/S.

In the setting "route", all group telegrams are routed without taking the filter table into account. This setting is only advisable for commissioning and diagnostics purposes. The option "route" should not be used during normal operation.

If no group telegrams should be sent from the LAN to the EIB, the option "block" must be selected. All the group telegrams from the LAN to the EIB are then blocked without taking the filter table into account.

Group telegrams from EIB to LAN

Options: filter
          route (default setting)
          block

The parameter "Group telegrams from EIB to LAN" defines whether telegrams with group addresses should be filtered, routed or blocked.

If the setting "filter" is selected, the telegrams with group addresses from the EIB to the LAN are filtered in accordance with the filter table.

> **Note:**
> The filter table must be generated by clicking on the 🗒 Filter button in the Project Design module prior to programming the IG/S.

In the setting "route", all group telegrams are routed without taking the filter table into account. This setting is only advisable for commissioning and diagnostics purposes. The option "route" should not be used during normal operation.

If no group telegrams should be sent from the EIB to the LAN, the option "block" must be selected. All the group telegrams from the EIB to the LAN are then blocked without taking the filter table into account.

Route telegrams according to

Options: priority
          (default setting)
          order of receipt

If a large number of telegrams are transmitted from the EIB to the LAN or from the LAN to the EIB, telegrams may have to be stored temporarily in the IG/S due to a high bus load.

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If telegrams are written to a temporary storage device, it can be defined with this parameter whether the telegrams should be routed in the order they arrived ("order of receipt") or whether telegrams with a higher priority should be sent ("priority").

"IP Address" tab

The "IP Address" tab is used to set the IP parameters of the IG/S.

Assign IP Address

Options: automatically
           (default setting)
           manually

In the default setting ("automatically"), the IG/S expects to be assigned an IP address by a DHCP (dynamic host configuration protocol) server. This server assigns a free IP address to the device on request. If there is no DHCP server available in the network or if the IP address should always be identical, it can also be assigned manually.

⚠️ If the IG/S is set to receive an IP address automatically, the device waits for 30 seconds to be assigned an IP address. If there is no allocation during this period, the IG/S assigns itself an IP address in the range 169.254.xxx.yyy via AutoIP.

IP Address, Subnet Mask, Default Gateway

If the option "manually" is selected for the parameter *Assign IP Address*, the IP Address, Subnet Mask and Default Gateway are activated and can be permanently assigned.

The Subnet Mask defines the class of the network. The Subnet Mask must be set according to the number and structure of the subnetworks. In the simplest case of a small LAN, the Subnet Mask must be set to 255.255.255.0.
The parameter *Default Gateway* indicates the connection point (e.g. the IP address of a router) between networks through which the IP telegrams should be transferred.
These gateways are only available in large networks. The setting 0.0.0.0 can be retained for small networks.

Project ID

Input: 0...255 (default value = 0)

The project ID is used to combine several IG/S devices into a group. In addition to the filter table for the telegrams, the IG/S devices evaluate this parameter in telegrams to establish whether the telegrams are intended for them or not. Several different EIB installations can thus be operated on one network without any interaction. If only one EIB installation is operated on the network, the default setting can be retained.

"Status" tab

The settings for the status signals of the IG/S are located in this tab.

Send telegram on EIB fault

Options: no (default setting)
           yes

If this parameter is set to "yes", the communication object *EIB fault* also appears in the object window of the ETS program. If a group address has been assigned to this communication object, the IG/S sends an ON telegram as soon as the connection to the EIB is disrupted.

Send telegram on LAN fault

Options: no (default setting)
           yes

If this parameter is set to "yes", the communication object *LAN fault* also appears in the object window of the ETS program. If a group address has been assigned to this communication object, the IG/S sends an ON telegram as soon as the connection to the LAN is disrupted.

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Send telegram on 230 V AC fault

Options: no (default setting)
            yes

If this parameter is set to "yes", the communication object *230 V AC fault* also appears in the object window of the ETS program. If a group address has been assigned to this communication object, the IG/S sends an ON telegram as soon as the 230 V AC power supply is disrupted.

Send telegram on 12 V DC fault

Options: no (default setting)
            yes

If this parameter is set to "yes", the communication object *12 V DC fault* also appears in the object window of the ETS program. If a group address has been assigned to this communication object, the IG/S sends an ON telegram as soon as the 12 V DC power supply is disrupted.

Acknowledge faults

Options: no (default setting)
            yes

If this parameter is set to "yes", the communication object *Fault acknowledgement* also appears in the object window of the ETS program. All fault messages that occur (see above) only remain active until the IG/S receives an ON telegram at the *Fault acknowledgement* object. The fault messages that are no longer active are then reset.

Send status byte on error

Options: no (default setting)
            yes

If this parameter is set to "yes", the IG/S sends the status byte via the communication object *Status IP Gateway* as soon as an error has occurred. This error can be one of the following errors or a combination of several errors:

Bit in status byte	Value on error	Error
0	1	230 V fault
1	2	12 V fault
2	4	LAN fault
3	8	EIB fault
4	16	DHCP set but no IP address received from the server
5	32	NTP activated but no time telegrams received from the NTP server
6	64	Queue overflow in IP direction
7	128	Queue overflow in EIB direction

Send "Status IP Gateway" telegram cyclically

Options: no (default setting)
            yes

In the default setting (no), the status of the IP gateway is not sent cyclically. If the option "yes" is selected, an additional object *Status IP Gateway* appears in the object view of the ETS program. The additional parameter *Send interval* is also visible in the parameter window (see below).

Telegram value: "0": = Status OK ,
                   no fault
                   "1": = one (or
                   several) fault(s)

If cyclical sending has been selected, a '0' is sent cyclially when the status is OK. If a fault occurs, a '1' (=fault) is sent once and the cyclical sending is interrupted. A '0' is only sent cyclically again once the fault has been rectified.

If the following faults occur, the status is set to '1':

LAN fault
EIB fault

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Send interval

Options: 5 s, 10 s, 30 s, 1 min,
5 min, 10 min, 30 min,
1 h, 6 h 12 h, 24 h

The parameter *Send interval* is only visible if the parameter *Send "Status IP Gateway" telegram cyclically* has been set to "yes".
The most suitable option for the application can be selected from the list of possible intervals.

"Time" tab

Parameters for setting the time response of the IG/S on the EIB are located in the "Time" tab.

IP Gateway is Time Master

Options: no (default setting)
yes

If the option "yes" is selected, the IG/S is a time generator on the EIB and sends time and date telegrams itself. Further parameters are activated in this setting. If "yes" is selected, the IP address of the LAN time generator must be entered.

IP Address LAN Time Master

Input: IP address in the format aaa.bbb.ccc.ddd

If the IP gateway has been parameterised as a time generator on the EIB, the IP address of a time generator from which the IP gateway can obtain the time must be entered in the LAN. This time generator must support the NTP (network time protocol) and send the time accordingly. The IG/S then reads the time from the LAN time generator and routes it as a telegram on the EIB.
After entering the IP address of the LAN time generator, the communication objects *Time* and *Date* are also displayed in the object window of ETS.

Send time telegram every

Options: 1 min, 10 min, 30 min, 1h,
8 h, 12 h, 24 h

This parameter indicates at which interval the IG/S should send the time telegram on the EIB if it is operating as a time generator. The entry field is only activated if the parameter *IP Gateway is Time Master* is set to "yes".

Send date telegram every

Options: 8 h, 12 h, 24 h

This parameter indicates at which interval the IG/S should send the date telegram on the EIB if it is operating as a time generator. The entry field is only activated if the parameter *IP Gateway is Time Master* is set to "yes".

Time zone

Options: – 12 International Date Line (Western) ...
+ 12 NZST New Zealand Standard Time

The time zone can be selected here according to the location of the IP gateway. The default setting "+ 01: (default value) CEWT Central European Wintertime" is suitable for European states.

Daylight saving time

Options: automatically
manually
none

With this parameter, you can select whether the daylight saving time should be converted automatically (recommended) or entered manually. If you select "manually", the following parameters are available.

Begin (day, month, time)
(of daylight saving time)

Select the day, month and time for converting to summertime).

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End (day, month, time)
(of daylight saving time)

Select the day, month and time for re-
verting back to wintertime.

Delta (hours)
(of daylight saving time)

Select here the time difference in
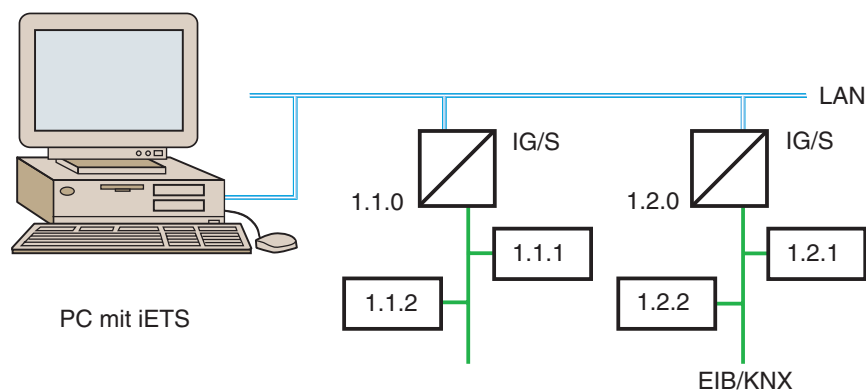hours between wintertime and sum-
mertime.

Programming with the iETS

In addition to the standard version of
the Engineering Tool Software ETS,
there is the so-called Internet ETS
(iETS). The iETS enables the pro-
gramming of EIB devices from a PC
which is only connected to the LAN
network. This PC then operates as a
client of a server (service provider).
To be able to program an EIB device,
the iETS must be used on the client.
The server makes the interface con-
nection to the EIB available.

The IG/S can function as an iETS ser-
ver. The data between the EIB and the
LAN is exchanged as before. In additi-
on, the programming services are
made available for an iETS client
which is running on a PC on the net-
work. The devices must then be linked
as follows.

The iETS client software is included in
the standard ETS program from ETS2
version 1.3 onwards. A demo licence is
also provided with a set time limit.
The licence for the iETS client must be
purchased from the EIBA/Konnex as-
sociation once the demo version has
expired (see www.eiba.com).

A more detailed description of pro-
gramming with the iETS and the IG/S
can be found in the IG/S product manu-
al. You can also download this manual
from the Internet at www.abb.de/eib.

PC mit iETS

Programming sequence for several IP gateways

During the initial assignment or
modification of the physical address of
the IP gateway, the following sequence
should be observed during pro-
gramming:

1. Match the physical address of the
   RS 232 interface to the topology
   of the line of the IG/S.
   (e.g. RS232: 1.1.255, IG/S as
   line coupler: 1.1.0)

2. Assign the physical address of IG/S
   no. 1 in the line of the RS 232
   interface (e.g. here 1.1.0).

3. Program the physical address of
   the   remote IG/S device (linked with
   IG/S no. 1 via the LAN).

4. Program the parameters (or
   application) of the remote IG/S.

5. Program the EIB devices in the line
   of the remote IG/S.

6. Finally program the parameters (or
   application) of IG/S no. 1.

When modifying the parameters of the
IG/S, it is possible to start with step 4.

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Communication objects

2

No.	Type	Object name	Function
0	1 bit, EIS1	EIB fault	Send telegram
1	1 bit, EIS1	LAN fault	Send telegram
2	1 bit, EIS1	230 V AC fault	Send telegram
3	1 bit, EIS1	12 V DC fault	Send telegram
4	1 bit, EIS1	Fault acknowledge.	Receive telegram
5	1 bit, EIS1	Status IP Gateway	Send telegram
6	1 byte, EIS6	Status byte IP Gateway	Send telegram
7	3 byte, EIS3	Time	Send telegram
8	3 byte, EIS4	Date	Send telegram