

IntesisBox[®] KNX

Mitsubishi Electric G-50A/GB-50A/GB-50ADA/AG-150A

User's Manual

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Gateway for integration of Mitsubishi Electric City Multi air conditioning systems into KNX TP-1 (EIB) control systems.

Two models are available for this gateway, with the following **Order Codes**:

ME-AC-KNX-15

Model supporting integration of up to 15 City Multi groups.

ME-AC-KNX-100

Model supporting integration of up to 100 City Multi groups.

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1. Description

1.1 Introduction

IntesisBox KNX - Mitsubishi Electric G50 is a communication gateway for the integration of Mitsubishi Electric City Multi air conditioning systems into KNX TP-1 (EIB).

The aim of this integration is to make accessible the Mitsubishi Electric City Multi AC system signals and resources from a KNX system, as if it was a part of the own KNX system. For this, *IntesisBox KNX - Mitsubishi Electric G50* acts as a KNX device in the KNX installation allowing any KNX device to read and write its internal points.

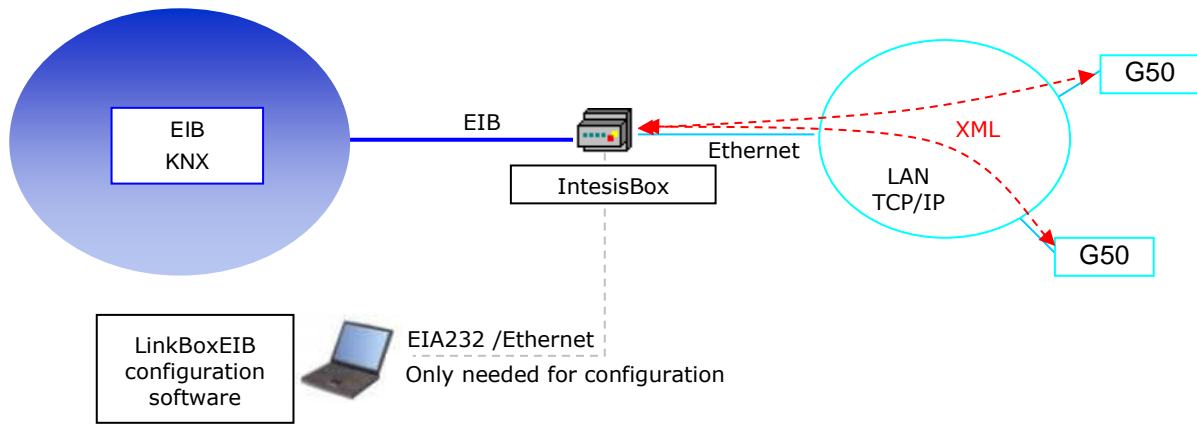
This integration requires the Mitsubishi Electric City Multi AC system be equipped with the Mitsubishi Electric G-50A, GB-50A, GB-50ADA, EB-50, AG-150A, AE-200A (G50 from now on) gateway. More specific information about this gateway can be found in section 2.2.



NOTE: Please, remember that Mitsubishi Electric AG-150A requires a software license, PC-Monitoring license (SW-Mon), that must be purchased together with the AG-150A gateway.

1.2 Functionality

Every one of the mentioned signals have to be associated to an KNX group address, with this, all the system is seen as a one more KNX device, with the same configuration and functioning characteristics.



IntesisBox KNX continuously polls (read) all the G50's configured signals and maintains the updated status of all of them in its memory ready to be served when requested from KNX.

When a change of status is detected in a Mitsubishi Electric signal, a write telegram is sent to the KNX bus, of the associated KNX Group.

When it is received a telegram from the KNX bus, of a KNX Group address associated to a Mitsubishi Electric signal, a message is sent immediately to the corresponding G50 to perform the corresponding action in the Mitsubishi Electric system.

In the continuous polling of the G50, if a non-response of the G50 is detected, the corresponding virtual signal inside the gateway will be activated indicating communication error with the G50. The same way, there is also a virtual signal per every City Multi group to indicate communication error with the group, this signal will be normally activated if the group is not configured inside the G50. Note that, although the internal units are not connected physically in the City Multi system, the G50 responds as if they were.

1.3 Capacity of IntesisBox

Element	Max.	Notes
Num. of G50	2	Number of independent G50 interfaces 2 x G-50A / GB-50A / GB-50ADA / EB-50 2 x AG150 (without Expansion Controllers) 1 x AG150 (with 2 Expansion Controllers) 2 x AE200 (without Expansion Controllers) 1 x AE200 (with 1 Expansion Controller)
Num. of City Multi groups: Num. of G50 x 50	100	Number of groups of AC indoor units
Num. of KNX Groups	5902	Total number of KNX Groups that can be used in IntesisBox.
Num. of listening addresses	2000	Number of KNX groups that can be used as listening addresses.
Num. of listening addresses per KNX Group.	255	Number of listening addresses that can be associated to an KNX group address.

There are various models of IntesisBox KNX – Mitsubishi Electric G50 with different capacity. The limits showed above are for the model with maximum capacity. The two versions of IntesisBox are:

- Version with capacity of one G50 and 15 City Multi groups.
Ref.: ME-AC-KNX-15
- Version with capacity of two G50s and 100 City Multi groups.
Ref.: ME-AC-KNX-100

2. Interfaces

2.1 KNX TP-1 (EIB)

IntesisBox KNX - Mitsubishi Electric G50 supports the KNX TP-1 (EIB) physical layer, as defined in the KNX standard. It behaves as one more device of the KNX system, with the same configuration and functional characteristics as other KNX devices.

KNX TP-1 (EIB) bus provides a 30V DC current, which can even directly power certain low-consumption KNX devices. IntesisBox does not drain any significant current from the KNX bus - it has a separate own power supply. Another important electrical aspect is that the KNX TP-1 (EIB) port of IntesisBox is optically isolated (~2500Vrms AC) from all its other ports (EIA232, EIA485, Ethernet) and power supply.

At logical level, all KNX devices feature an interface of communication objects, by which their functionality is abstracted. As a basic example, a KNX interface of an AC indoor unit would typically consist of an interface of datapoints such as "On/Off", "Setpoint temperature", "Operating mode", etc.

Associations between communication objects from different KNX devices are done by means of so-called group addresses.

KNX telegrams within a working KNX installation are always addressed to a certain KNX group address. Typically, whenever a communication object on a KNX device changes its value, the new value is updated to the bus, by sending a "write" telegram addressed to its associated group address. The rest of KNX devices in the installation that have a communication object associated to this group address will act accordingly on reception of the new value.

Other operations are possible. KNX devices can also decide to read the current value of the communication objects, by sending a "read" telegram to a certain group address (previously known to be associated to the targeted comm. object). This operation is performed by many devices on bus start-up or recovery - in this way, the device gets the latest value of the group addresses it has associated right from its start-up.

Each datapoint defined in IntesisBox KNX configuration needs to have at least a single KNX group address associated with it. This group address will be used either for sending updates *to* KNX of the datapoint value (that have been generated on the other G50 interface of the IntesisBox), or receiving updates *from* KNX of the datapoint value (that will be propagated to the G50 side in this case)

From the point of view of KNX functionality, each datapoint of IntesisBox can hold following group address associations:

- A single KNX group address with which update/write telegrams will be sent, whenever the datapoint changes (as a result of a change coming from the other interface of IntesisBox, G50 in this case).
- One or more KNX group addresses from which this datapoint of IntesisBox will be updated/written from the KNX installation (resulting in a change to the other side of IntesisBox, G50 in this case).
- A single KNX group address from which IntesisBox will read the object value on KNX bus recovery / IntesisBox start-up.

Behavior of IntesisBox' datapoints regarding their associated group addresses is defined by means of flags (R, W, T, U and U2), explained in section 5.1.2.

Additional to the binding aspect commented above, it is also important to notice that each KNX communication object has a defined *EIS type*. The EIS type of a communication object defines the bit length and coding of the data it represents. Communication objects associated by means of a group address need to match the same EIS type, in order to communicate consistently.

So, at configuration time it is required that for each datapoint configured on IntesisBox an EIS type is defined. Datapoints on IntesisBox KNX support the following EIS-types:

- EIS1 - Switching (1bit raw)
- EIS2 - Dimming (4bit raw)
- EIS5 - Value (16bit - floating type)
- EIS6 - Scaling (8bit - scaled 0%-100% in values 0-255)
- EIS7 - Drive Control (1bit raw)
- EIS8 - Priority (2bit raw)
- EIS9 - IEEE 754 float (32bit - floating type)
- EIS10 - 16bit Counter (16bit raw)
- EIS11 - 32bit Counter (32bit raw)
- EIS13 - ASCII char (8bit raw)
- EIS14 - 8bit Counter (8bit raw)

ETS software tools are not used to configure IntesisBox. Though, it's typical that the choice of which KNX group addresses to use is restricted or defined by an ETS-based project. If that's the case, the KNX installer/integrator needs to provide the set of group addresses prior to doing the configuration of datapoints in LinkBoxEIB.

Also, a *dummy* ETS application is provided by Intesis Software (section 6), which can be imported into ETS. This application is not downloadable into IntesisBox KNX neither usable for IntesisBox configuration. Rather, it poses as a means of having a device in the ETS project representing the IntesisBox KNX and its own datapoints/communication objects, and to which group addresses are associated.

2.2 Mitsubishi Electric G50

This gateway from Mitsubishi Electric offers the signals of the City Multi AC system through XML protocol. Every G50 (G-50A, GB-50A, GB-50ADA, EB-50, AG-150A or AE200A) allows access to the signals of up to 50 City Multi indoor units and 50 groups, no matter the number of outdoor units installed. In the G50, the group is the control unit; every group can have from 1 to 16 associated indoor units. This integration supervises and controls groups, not indoor units, although if only one indoor unit is associated to every group then you can supervise and control indoor units individually.

This G50 gateway is supplied by Mitsubishi Electric. The difference between the G-50A and GB-50A/GB-50ADA is that the first incorporates display and keyboard and the second ones just blind cover. The new AE-200A is also compatible with IntesisBox (with or without Expansion Controllers). At integration level, all of them allow the same functionality. Contact your nearest Mitsubishi Electric distributor for more details about G-50A, GB-50A, GB-50ADA, EB-50, AG.150A and AE200A. In this document **we will refer to this gateway models (G-50A, GB-50A, GB-50ADA, EB-50, AG-150A and AE200A, without Expansion Controllers) as just G50. An AG-150 with 2 EC would work as 2 G50. An AE200A with 1 EC shall work as 2 G50.**

The following list shows the available signals to integrate per every group (of the 50 possible) of the G50:

Property	Description / Status
G50 Communication Error	Communication error with G50 Virtual signal generated by IntesisBox® to indicate the status of the communication with the G50.
Group Communication Error	Group communication error Virtual signal generated by IntesisBox® to indicate that the group is not configured into the G50.
Drive	Start/Stop Read/Write: ON, OFF
Mode	Operation Mode Read/Write: COOL (PFWY: Cooling), DRY (PFWY: AntiFreeze), FAN (PFWY: HeatingEco), HEAT (PFWY: Heating), AUTO (PFWY: HotWater), HEAT RECOVERY, LC_AUTO, BYPASS Read: AUTO HEAT, AUTO COOL
SetTemp	Temperature Set Point (values in steps of 0,5°C allowed from FW v.41.1.18) Read/Write: If the option of virtual SetPoint Temperature is deactivated (see in section 5.1.1 of this document). Write: If the option of virtual SetPoint Temperature is activated, to be configured from extern KNX sensor (see in section 5.1.1 of this document). For COOL or DRY Mode:19..30,0 °C, for HEAT Mode: 17..28,0 °C, for AUTO Mode:19..28,0 °C)
AirDirection	Air output direction (Vane Position) Read/Write: HORIZONTAL, MID1, MID2, VERTICAL, SWING, AUTO
FanSpeed	AC fan speed or LOSSNAY Read/Write: HIGH, MIDH, MIDL, LOW, AUTO
RemoCon	Prohibition for General control from the local panel Read/Write: PROHIBIT, PERMIT
DriveItem	Prohibition for ON/OFF control from the local panel Read/Write: CHK_ON, CHK_OFF
ModeItem	Prohibition for Mode control from the local panel Read/Write: CHK_ON, CHK_OFF
SetTempItem	Prohibition for Set Point control from the local panel Read/Write: CHK_ON, CHK_OFF

FilterItem	Prohibition for Filter Reset control from the local panel Read/Write: CHK_ON, CHK_OFF
Ventilation	Operational status for LOSSNAY or OA Read/Write: HIGH, LOW, OFF
FilterSignSts	Status for Filter Dirty Read: ON, OFF
ErrorSignSts	Error status Read: ON, OFF
InletTemp	Ambient Temperature Read: If the option of virtual SetPoint Temperature is deactivated (see in section 5.1.1 of this document). Write: If the option of virtual SetPoint Temperature is activated, to be measured from extern KNX sensor (see in section 5.1.1 of this document). Range: 0.0 to 99.9
FilterSignRst	Reset Filter Dirty indication Write: ON
ErrorSignRst	Reset Error indication for all units Write: ON
SetTemp1	Setpoint1 /COOL-DRY (when set Dual Setpoint CFG) °C
SetTemp2	Setpoint2 /HEAT (when set Dual Setpoint CFG) °C
SetTemp3	Setpoint3 /AUTO (when set Dual Setpoint CFG) °C
AutoModeSWEx	Auto Mode Setpoint Cfg (when set Dual Setpoint CFG) °C

For more information consult Mitsubishi Electric technical documentation supplied with the G50.

3. Quick Setup

1. Install LinkBoxEIB. (Details in section 5).
2. Install IntesisBox in the desired installation site (DIN rail mounting inside a metallic industrial cabinet connected to ground is recommended).
3. Power up and connect the communication cables. (Details in section 4).
4. Open LinkBoxEIB, open a project or create a new one. (Details in section 5).
5. Connect to the IntesisBox (Details in section 4).
6. (optional) Configure the IntesisBox. (Details in section 5.1).
7. Check if there is communication in the G50 bus and the G50. (Section 5).
8. The IntesisBox is ready to be used in your system.

4. Connections

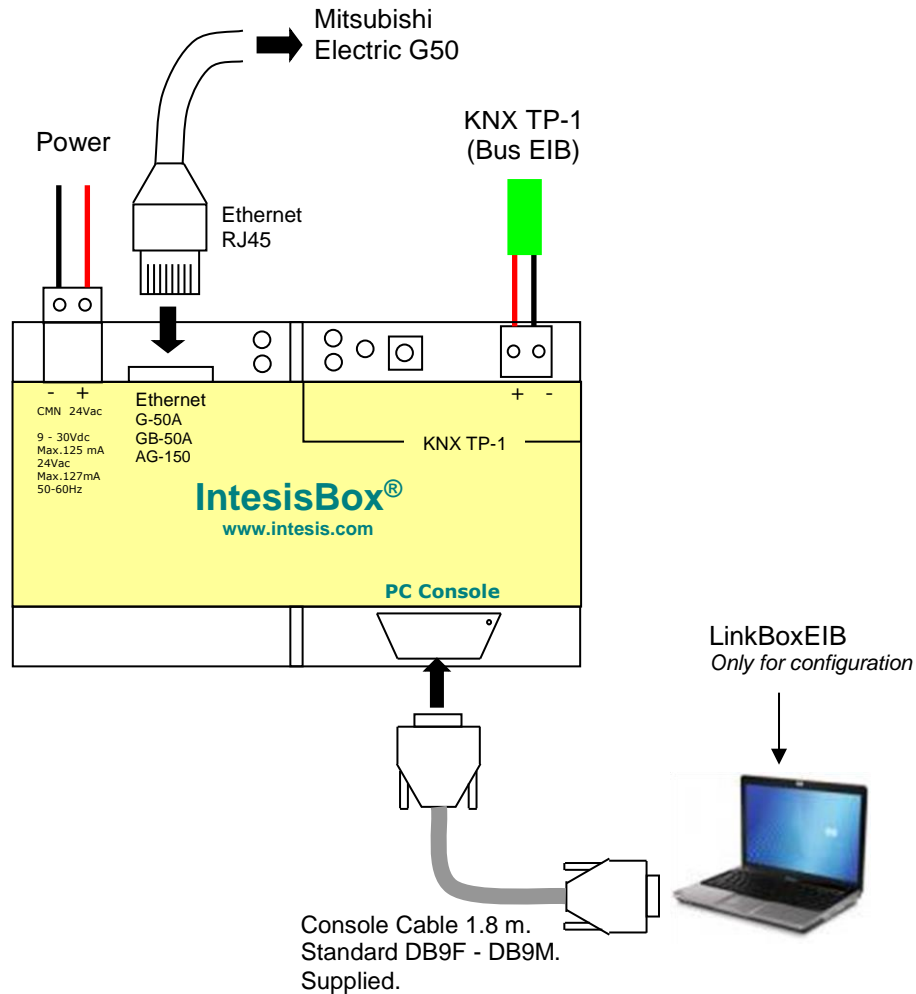


Figure 4.1 Device connection diagram

4.1 Power device

The first step to perform is to power up the device. To do so a power supply working with any of the voltage range allowed is needed. Once connected the ON led will turn on.

WARNING! In order to avoid earth loops that can damage the gateway and/or any other equipment connected to it, we strongly recommend:

- The use of DC power supplies, floating or with the negative terminal connected to earth. **Never use a DC power supply with the positive terminal connected to earth.**
- The use of AC power supplies only if they are floating and not powering any other device.

4.2 Connect to KNX

Connect + and – terminals of the KNX bus to the IntesisBox KNX connector (**Figure 4.1**). The polarity is important. Once connected correctly the KNX Tx led will start blinking. If that doesn't happen check that the cable is connected properly.

How to check if there is communication with the KNX bus is explained in the LinkBoxEIB Manual (section 5).

4.3 Connect to G50

Connect the communication cable coming from the network hub or switch to the ETH port (**Figure 4.1**) of IntesisBox. The cable to be used depends on where the IntesisBox is being connected:

- Connecting directly to Mitsubishi Electric G50 gateway: crossover Ethernet UTP/FTP CAT5 cable
- Connecting to a hub or switch of the LAN of the building: a straight Ethernet UTP/FTP CAT5 cable

In case there is no communication with the IntesisBox, check that the Mitsubishi Electric G50 is/are operative and reachable from the network connection used by IntesisBox. Check the IntesisBox Ethernet interface sending Pings to its IP address using a PC connected to the same Ethernet network.

4.4 Connect to PC (LinkBoxEIB)

This action allows the user to have access to configuration and monitoring of the device (more information can be found in the LinkBoxEIB User Manual [section5]. Two methods to connect to the PC can be used:

- Ethernet: Using the ETH port (**Figure 4.1**) of IntesisBox for communication over UDP (default UDP port 23). How to check connectivity is explained in section 4.3.
- Serial cable: To connect the device to the PC the serial cable supplied should be plugged to the PC console port (**Figure 4.1**). The cable is a RS-232 straight cable and its pinout is at explained in Table 4.1.

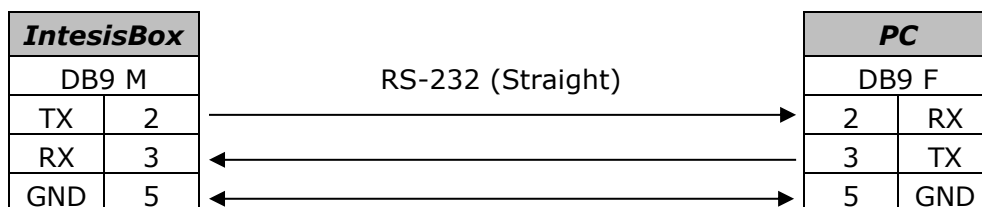


Table 4.1 Configuration serial cable pinout

5. LinkBoxEIB. Configuration & monitoring tool for IntesisBox® KNX series

How to install and use the LinkBoxEIB is explained in its Manual. It can be found in the installation folder (if the Software is already installed) or it can be downloaded from the link that can be found in the installation sheet supplied with the IntesisBox®.

In this section only the specific project configuration for IntesisBox KNX - Mitsubishi Electric G50 is going to be explained.

The External Protocol in this IntesisBox® is G50.

5.1 Project configuration

To configure the integration connection parameters, and the points list, click on *Config* in the *Button Bar* (Figure 4.1). The *G50 Configuration* window will be opened. For integrations with a large number of points an alternative CSV based configuration method is explained in the LinkBoxEIB Manual.

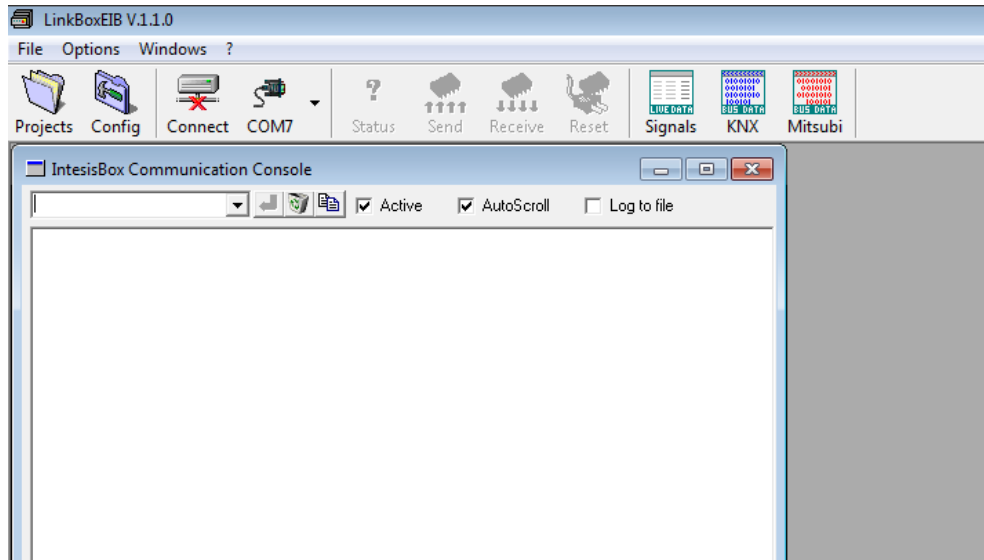


Figure 4.1 Menu and Button Bar in LinkBoxEIB

5.1.1 Connection configuration

Two subsets of information are configured using this window, the Mitsubishi Electric G50 parameters of the IntesisBox®, and the parameters of the G50 interface.

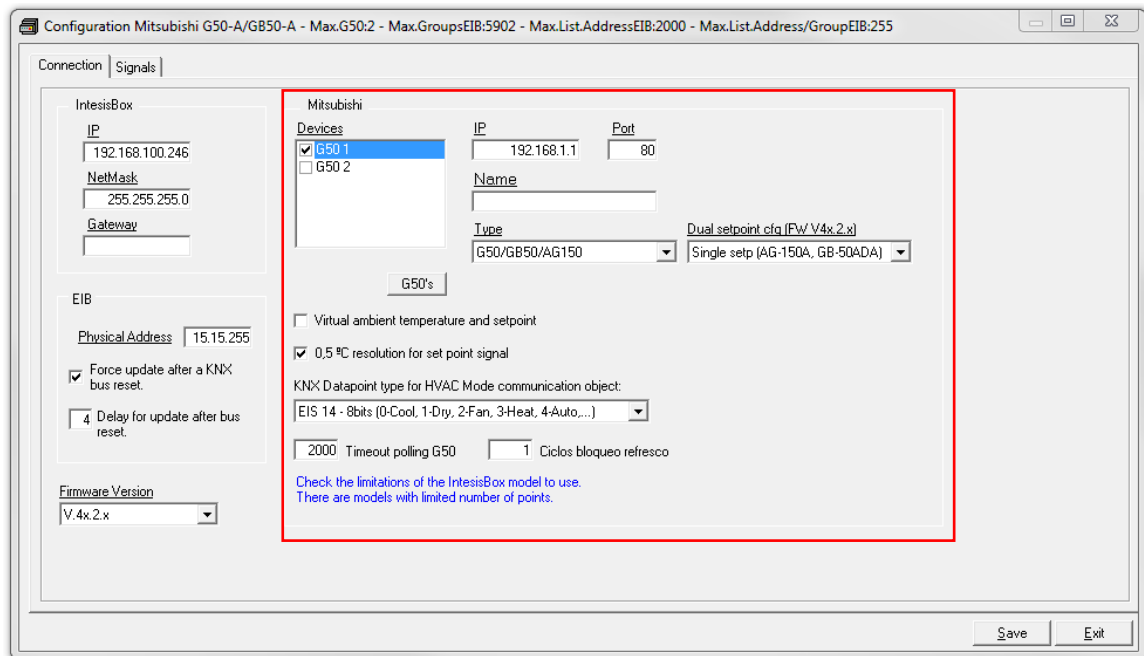


Figure 4.2 Configuration: Connection Tab

Mitsubishi interface configuration parameters:

- **Devices:** List of G50 devices.
- **IP:** IP address of the G50. When using expansion controllers with an AG150/AE200 the IP to be set is the one of the AG150/AE200, not the EC ones.
- **Port:** TCP port, normally 80.
- **Name:** Descriptive name, optional.
- **Type:** It needs to be selected what the IntesisBox is connected to. If EC are used which one is going to be used (1,2 or 3) needs to be selected here.
- **Dual Setpoint configuration:** Selection of Single Setpoint for older models AG150/GB-50ADA, or new models in "old model compatibility mode". Or Dual Setpoint for EB-50GU and newer. Allow the use of separate setpoints for Cool-dry/Heat/Auto.
- **G50's button:** Use the button to automatically define (and insert in the list) the number of G50s to connect to. Take into account that the number of G50s defined must be in accordance with the gateway model used. There are two models, with the following order codes:
 - **ME-AC-KNX-15.** Model supporting up to 15 City Multi groups.
 - **ME-AC-KNX-100.** Model supporting up to 100 City Multi groups.

You can identify the model of your gateway by the Order Code printed in the front label or also by the identification given by the gateway is response to an INFO command, it is something like this:

IntesisBox_EIB_MITSUBISHIG50-1... -> this is the model with up to one G50, up to 15 City Multi groups.

IntesisBox_EIB_MITSUBISHIG50-2... -> this is the model with up to two G50s, up to 100 City Multi groups.

- **Virtual ambient temperature and setpoint:** This option has been implemented to force the G50 group to work based on a Setpoint and an Ambient Temperature provided from KNX (any KNX device).

Código	Signal	EIS	Group	Listening addresses	R	W	T	U	Active
2 - SetTemp	Temperature set point -in mode COOL or DRY:19..30	5 - Float (16 bit)	1/0/2			W		U	1-Yes
Código	Signal	EIS	Group	Listening addresses	R	W	T	U	Active
13 - InletTemp	Ambient Temperature	5 - Float (16 bit)	1/0/13			W		U	1-Yes

When this option is activated, communication objects "2-SetTemp" (Temperature Setpoint) and "13-InLetTemp" (Ambient Temperature) will become of type Write-only. In this situation these two objects accept writings from KNX (i.e. to be provided by any KNX thermostat). Both values will be read from the bus at IntesisBox's start-up ("U" Update). In this situation we call these two objects "Virtual Setpoint" and "Virtual Ambient Temperature".

The actual setpoint sent to the G50 group is given by the following formula:

"Temp. Setpoint (the one sent to the G50 group)" = "InLet Temperature (inlet-ambient temperature of the unit/G50 group)" - ("Virtual Ambient Temperature" - "Virtual Setpoint")

In this situation, the actual Setpoint Temperature on the G50 group and the actual Ambient Temperature measured in the air inlet of the G50 group are not visible from KNX.

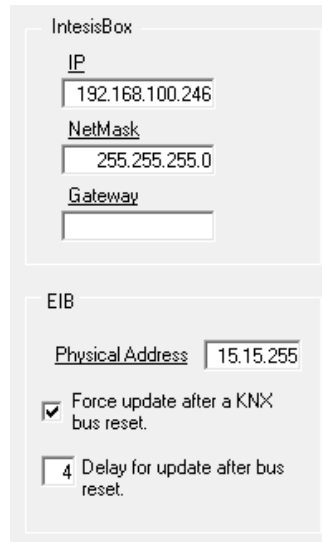
When deactivated, the communication object "2-SetTemp" for the Set point temperature shall be read and writable, and the Ambient temperature value reading from the system) shall be only readable. (only "R" flag selectable)

Código	Signal	EIS	Group	Listening addresses	R	W	T	U	Active
2 - SetTemp	Temperature set point -in mode COOL or DRY:19..30	5 - Float (16 bit)	1/0/2		R	W	T		1-Yes
Código	Signal	EIS	Group	Listening addresses	R	W	T	U	Active
13 - InletTemp	Ambient Temperature	5 - Float (16 bit)	1/0/13		R		T		1-Yes

- **Decimal resolution for setpoint signal:** Activates 0,5° resolution for the setpoint, when not active, a 1°C resolution will apply. (Available from V.41.1.18 onwards).
- **KNX Datapoint type for HVAC...:** The "1-Mode" object will use the KNX datapoint/codification selected here.
 - EIS-14 - 8bits: 0-Cool, 1-Dry, 2-Fan, 3-Heat, 4-Auto, 5-AutoHeat, 6-AutoCool.
 - DPT 20.105 – 8bits: 0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry.
 - DPT 1.100 – 1bit: 0-Cool, 1-Heat.
- **Timeout polling G50:** Polling cadence for G50s, in milliseconds, is the refresh frequency for the G50's signals.

- **Ciclos bloqueo refresco:** Polling cycles to validate the return of status for any command sent to Mitsubishi.

Interface configuration parameters:



The screenshot shows a configuration window for IntesisBox. It is divided into two sections: 'IntesisBox' and 'EIB'. In the 'IntesisBox' section, there are three input fields: 'IP' with the value '192.168.100.246', 'NetMask' with the value '255.255.255.0', and 'Gateway' which is currently empty. In the 'EIB' section, there is a 'Physical Address' field with the value '15.15.255'. Below this, there are two checkboxes: the first is checked and labeled 'Force update after a KNX bus reset.', and the second is unchecked and labeled 'Delay for update after bus reset.' with a small input field containing the number '4'.

Figure 4.3 KNX interface Configuration

- **IP:** Enter the IP address for IntesisBox (supplied by the network administrator). Default factory setting 192.168.100.246
- **NetMask** Enter the IP Net Mask for IntesisBox (supplied by the network administrator).
- **Gateway:** Enter the Default Gateway address (router address) in case IntesisBox is in a different sub network than the G50s (supplied by the network administrator). Leave blank if there is no need of router address.
- **Physical Address:** Enter the unique KNX physical address for the gateway.
- **Force update after a KNX bus reset:** Updates the values set with "U" flag after KNX bus reset.
- **Delay for update after bus reset:** After bus is active again the delay shall be applied before updating/reading the values. Used to avoid bus saturation on bus startup.

5.1.2 Signals list

Select the Signals tab to configure the signals list (the IntesisBox® internal points).

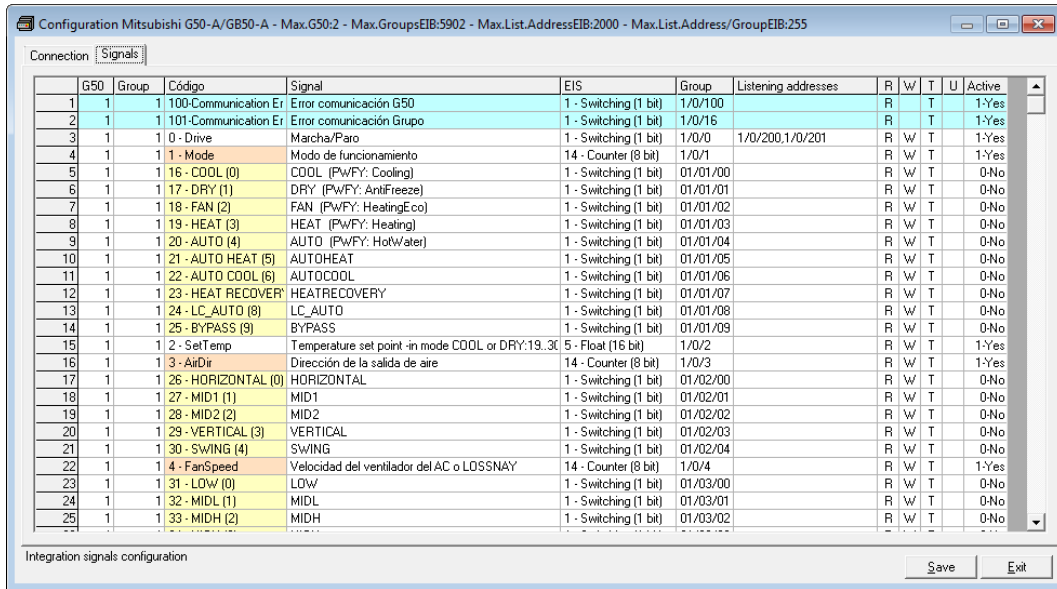


Figure 4.4 Signal list

# (Signal's number)	
Description	Enumeration of the rows in the grid (signals). If clicked on them the whole row will be selected (to be used to delete/add rows)
Restrictions	Cannot be edited

G50	
Description	Number of G50 to which corresponds the signal, referenced to the list of G50s defined in Tab <i>Connection</i> .
Values	<ul style="list-style-type: none"> 1 or 2
Restrictions	Edit not permitted

Group	
Description	City Multi group, it refers to the City Multi group of indoor AC units to which belongs the signal. Every G50 allows access to up to 50 groups.
Restrictions	Edit not permitted

Code	
Description	Identifies the different signals available per every City Multi group. An identification code is given to every different signal into the City Multi group,

	identifying every signal with an individual code. In section 2.2, an explanation of every signal is given. A contextual menu appears using mouse right button click over the column showing all the possible signal codes.
Restrictions	Edit not permitted.
Comments	PWFY signals differ from the others. Their values are specified in the signal column.

Signal	
Description	Signal's descriptive name (optional). Useful to identify the signal. The default descriptive name corresponds to the signal's code, but can be edited/modified.
Comments	If the description gives some good information about the physical location of the KNX point related, it may help during the gateway's integration phase into the KNX system.

EIS	
Description	KNX data type (Data point) to encode the signal's value. It will depend on the G50 type of signal associated to it in every case. Edit using the mouse right-button-click pop-up menu available on the column.
Values	<ul style="list-style-type: none"> • Switching (1 bit) • Dimming (4 bit) • Float (16 bit) • Scaling (8 bit) • Drive control (1 bit) • Priority (2 bit) • Float IEEE (32 bit) • Counter (8 bit) • Counter (16 bit) • Counter (32 bit) • ASCII char (8 bit) • Counter (8 bit)
Restrictions	Only the EIS defined in values are allowed.

Group	
Description	Main KNX group address for the signal. Flags <i>R, W, T, U</i> explained below will only apply for this main KNX group address, not for listening addresses.
Values	Group address in one of the following formats: <ul style="list-style-type: none"> • P/I/S • P/S • Single level (value 1 to 32767)
Restrictions	Duplicated groups are not allowed Empty groups are allowed, but only if they have just <i>W</i> activated and one or more listening addresses.

Listening addresses	
Description	KNX group addresses that will be listened by IntesisBox® for this signal. If IntesisBox® receives a KNX telegram whose destination is one of these listening addresses, the telegram will be taken into account and the corresponding action will be performed on this signal.
Values	Group addresses in one of the following formats: <ul style="list-style-type: none"> • P/I/S • P/S • Single level (value 1 to 32767) <p>More than one address can be entered, comma separated.</p>
Restrictions	It is not allowed a listening address that is the same as the sending group (circular reference). Listening addresses are not allowed if the flag <i>W</i> is not activated. Without <i>W</i> activated, the listening addresses would not work.

R	
Description	Indicates if this signal is allowed to be read from KNX system.
Values	<ul style="list-style-type: none"> • "R": flag activated • Blank: flag not activated
Restrictions	Needs the <i>T</i> flag active and therefore the software activates it automatically Can't be simultaneously active with flag <i>U</i> and it is disabled if that flag is activated. It has no restriction with <i>U2</i>

W	
Description	Indicates if this signal is allowed to be written from KNX system.
Values	<ul style="list-style-type: none"> • "W": flag activated • Blank: flag not activated
Comments	<p>If it is not active, no write on the group address neither on the listening addresses could be done from KNX</p> <p>KNX Update telegrams (responses to Read) are handled in the same way as Write telegrams, in all cases.</p>

T	
Description	Indicates if this signal will generate a telegram sending to the KNX system following a change of the signal's value, that is to say, any change of value of this signal in G50 side will be transmitted to the KNX system if this flag is activated.
Values	<ul style="list-style-type: none"> • "T": flag activated • Blank: flag not activated

U	
Description	Indicates if this signal will be updated (sending read requests) whenever IntesisBox® starts up or after a KNX bus reset.
Values	<ul style="list-style-type: none"> • "U": flag activated for the main KNX group address. A read of the main KNX group address will be performed in the KNX system for the update. • "U2": flag activated for the first listening address defined. A read of the first listening address defined for the point will be performed in the KNX system for the update. • Blank: flag not activated
Restrictions	Needs the W flag active and therefore the software activates it automatically When "U" is selected it disables the R flag.
Comments	DO NOT BE CONFUSED: Philosophy of IntesisBox® point's U flag is not the same as KNX device's U flag. In KNX devices, U flag means that the point's value will be updated whenever a write telegram for the group address is received by the device.

Active	
Description	Indicates if the signal is active or not for the integration

Values	<ul style="list-style-type: none"> • 0: Not active • 1: Active
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↕	
Description	Buttons to move the selected row (or rows) up or down inside the grid. To move up or down inside the grid a single row or a group of consecutive rows, just select the row or rows using the left button of the mouse and push the desired up or down button.
Comments	This can be done also using the key combinations <i>ALT+arrow up</i> or <i>ALT+arrow down</i> instead of up or down buttons

Add	
Description	Button that adds a row under the selected one.

Delete	
Description	Buttons to delete the selected row (or rows).

Save	
Description	Save the configuration (details in section 5.1.3)

Exit	
Description	Exits the configuration window.

5.1.3 Saving the configuration

When the configuration of the project is finished follow the next steps:

1. Click the button *Save*. Once accepted the pop-up message, that will save the project in the folder on hard disk (more information in LinkBoxEIB Manual).
2. You will be prompted to generate the configuration file to be sent to the gateway,
 - a. If *YES* is selected, the binary file (KNX.LBOX) containing the configuration for the gateway will be generated and saved also into the project folder.
 - b. If *NO* is selected the binary file needs to be created before following the next steps. To do so open the Configuration window (section 5.1) and restart from step 1.
3. Once in the configuration window again, click on exit. The configuration is ready to be sent to the IntesisBox® (check LinkBoxEIB Manual).

The configuration cannot be received from the gateway to LinkBoxEIB, it can only be sent.

6. IntesisBox® and ETS

6.1 Integration of IntesisBox® in ETS

As explained the IntesisBox® is configured with the LinkBoxEIB but in some projects it might be needed to integrate the gateway in the ETS project, for example to allow the line couplers have a correct configuration of their filter tables. To do so a Dummy device can be used in ETS to simulate the IntesisBox® and associate also to this Dummy device all group addresses used in IntesisBox®.

The dummy device can be downloaded from:

https://www.intesisbox.com/intesis/product/media/Dummy_Intesis.zip

7. Mechanical & electrical characteristics

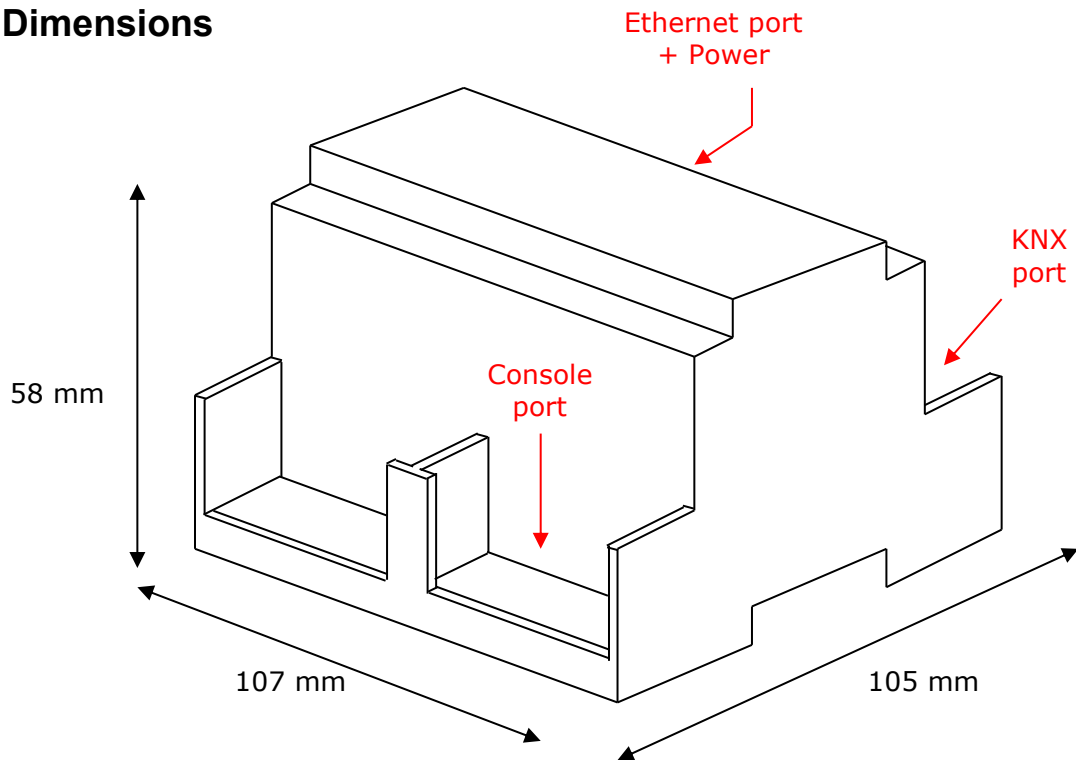


Enclosure	Plastic, type PC (UL 94 V-0). Dimensions: 5 DIN modules. 107mm x 105mm x 58mm.
Colour	Light Grey. RAL 7035.
Power	9 to 30Vdc +/-10% 1.4W. 24Vac +/-10% 1.4VA. Plug-in terminal block for power connection (2 poles).
Mounting	Surface. Wall. DIN rail EN60715 TH35.
Mitsubishi Electric G50 port	1 x Ethernet 10BT RJ45.
KNX port	1 x KNX TP1 (EIB) opto-isolated. Plug-in terminal block (2 poles).
LED indicators	1 x Power. 2 x KNX port activity (Tx, Rx). 2 x Ethernet port link and activity (LNK, ACT). 1 x KNX programming/bus. ¹
Push buttons	1 x KNX programming. ¹
Console port	RS232. DB9 female connector (DCE).
Configuration	Via console port ² or Ethernet (UDP port 23).
Firmware	Allows upgrades via console port.
Operational temperature	-40°C to +70°C
Operational humidity	5% to 95%, non condensing
Protection	IP20 (IEC60529).
RoHS conformity	Compliant with RoHS directive (2002/95/CE).
Certifications	CE

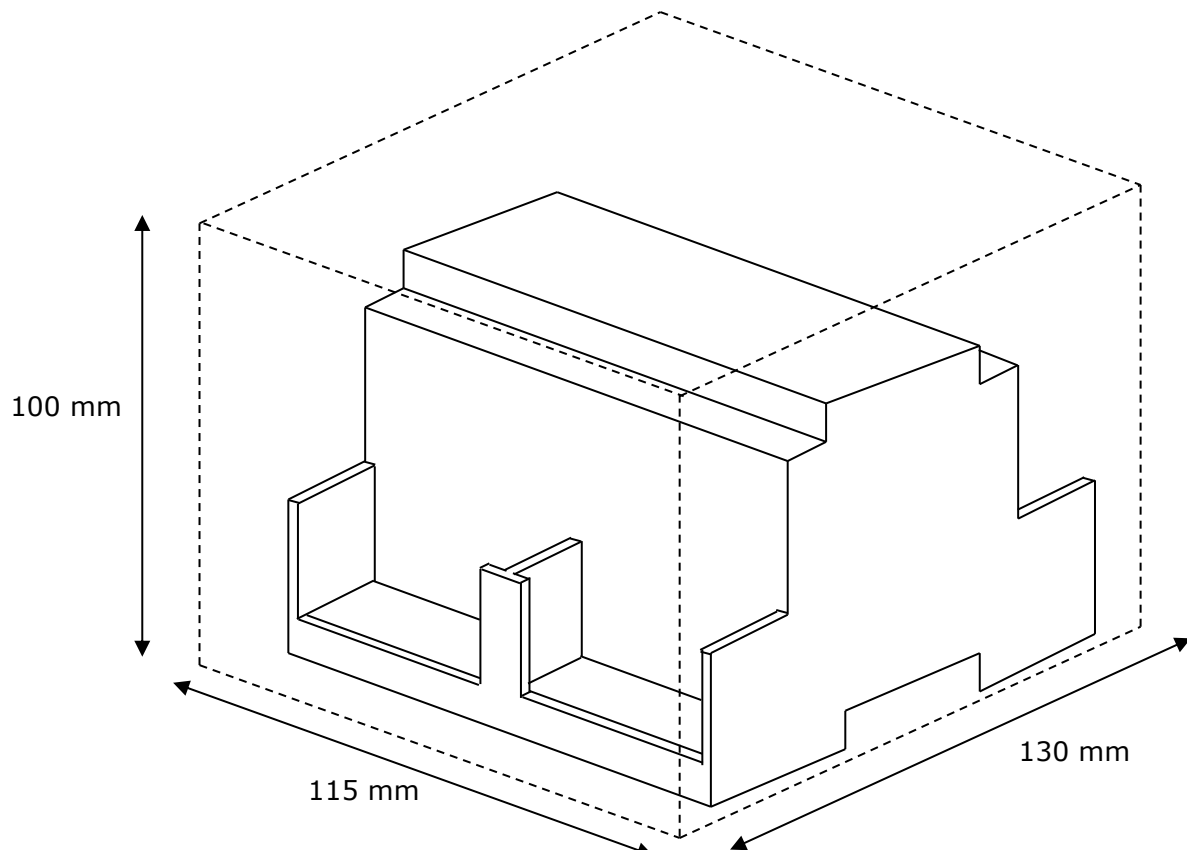
¹ Not operational for the moment. Reserved for future use.

² Standard cable DB9male-DB9female 1,8 meters long is supplied with the device for connection to a PC COM port for configuring and monitoring the device. The configuration software, compatible with Windows® operating systems, is also supplied.

8. Dimensions



Free space recommended installing the device into a cabinet (wall or DIN rail mounting), with spacing enough for external connections:



9. Annexes

9.1 Gateways Mitsubishi Electric G-50A, GB-50A, GB-50ADA, EB-50, AG-150A and AE-200A/E



G-50A



GB-50A



GB-50ADA



EB-50GU-A



AG-150A



AE-200E

For more information about these devices, contact your nearest Mitsubishi Electric dealer.