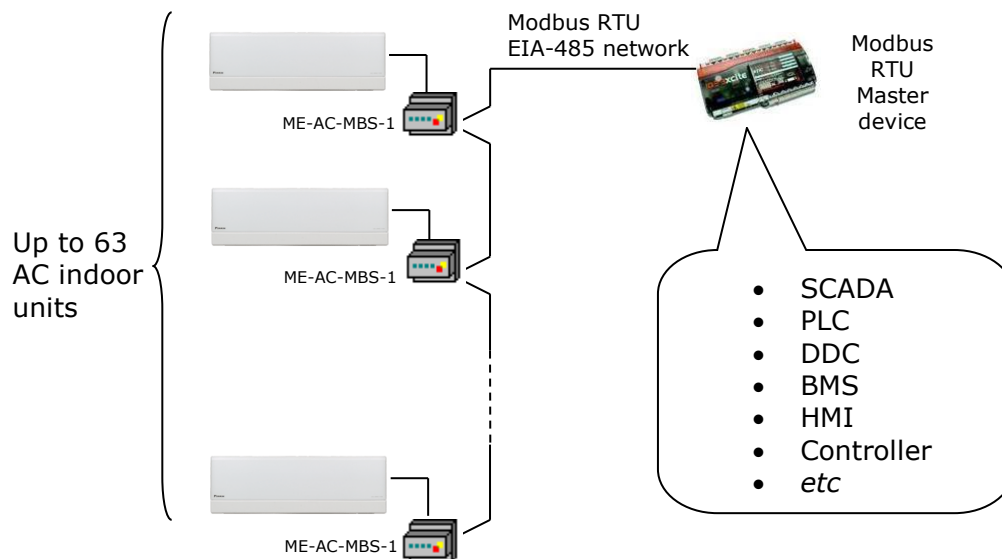




## IntesisBox® ME-AC-MBS-1

### Modbus Interface for MITSUBISHI ELECTRIC Air Conditioners (Domestic Line and Mr. Slim)



The ME-AC-MBS-1 interface allows a complete and natural integration of **Mitsubishi Electric** air conditioners into Modbus RTU (EIA-485) networks. Compatible with Domestic line models commercialized by **Mitsubishi Electric**

- Reduced dimensions. 93 x 53 x 58 mm / 3.7" x 2.1" x 2.3"
- Quick and easy installation. *Mountable on DIN rail, wall, or even inside the unit in some models of AC.*
- External power not required.
- Direct connection to Modbus RTU (EIA-485) networks. Up to 63 ME-AC-MBS-1 devices can be connected in the same network. ME-AC-MBS-1 is a Modbus Slave device.
- Direct connection to the AC indoor unit. Up to 1 indoor unit can be connected to ME-AC-MBS-1. *The cable for this connection is also supplied.*
- Configuration from both on-board DIP-switches and Modbus RTU.
- Total Control and Supervision.
- Real states of the AC unit's internal variables.
- Allows using simultaneously remote controls and Modbus RTU.

## 1. Modbus Interface

### 1.1 Modbus Functions

ME-AC-MBS-1 implements the following standard Modbus functions:

- 3: Read Holding Registers
- 4: Read Input Registers
- 6: Write Single Register
- 16: Write Multiple Registers (Despite this function is allowed, the interface does not allow write operations on more than 1 register with the same request, this means that *length* field should always be 1 when this function is being used to write).

### 1.2 Modbus Communication parameters

ME-AC-MBS-1 implements a Modbus RTU (Slave) interface, to be connected to an EIA-485 line. The communication parameters are:

8N2 communication (8 data bits, no parity and 2 stop bit). It also supports 8N1 communication (1 stop bit). No need to change settings of DIP-switches.

Configurable baud rates:

- 2400 bps
- 4800 bps
- 9600 bps (Default)
- 19200 bps
- 38400 bps
- 57600 bps
- 76800 bps
- 115200 bps

## 2. List of compatible Mitsubishi Electric AC indoor units.

A list of Mitsubishi Electric indoor unit model references compatible with ME-AC-MBS-1 and their available features can be found at:

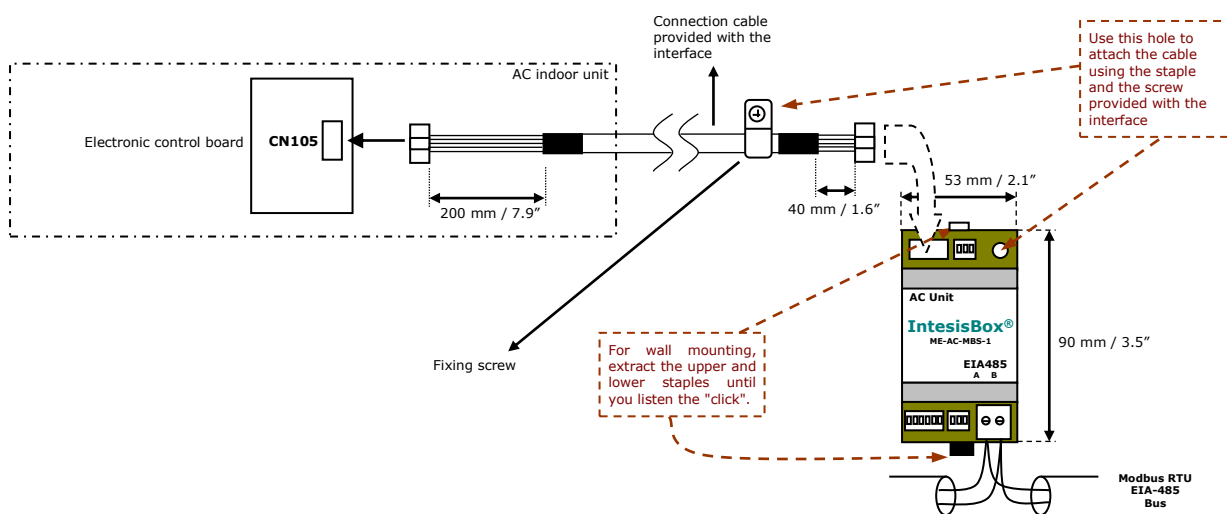
[https://www.intesisbox.com/intesis/support/compatibilities/IntesisBox\\_ME-AC-xxx-1\\_AC\\_Compatibility.pdf](https://www.intesisbox.com/intesis/support/compatibilities/IntesisBox_ME-AC-xxx-1_AC_Compatibility.pdf)

### 3. Electrical and Mechanical features

Enclosure	Plastic, type PC (UL 94 V-0) Net dimensions (dxwxh): 93 x 53 x 58 mm / 3.7" x 2.1" x 2.3" Color: Light Grey. RAL 7035	Operation Temperature	0°C to +60°C
Weight	85 g.	Stock Temperature	-20°C to +85°C
Mounting	Wall DIN rail EN60715 TH35.	Operational Humidity	<95% RH, non-condensing
Terminal Wiring (for low-voltage signals)	For terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5mm <sup>2</sup> ... 2.5mm <sup>2</sup> 2 cores: 0.5mm <sup>2</sup> ... 1.5mm <sup>2</sup> 3 cores: not permitted	Stock Humidity	<95% RH, non-condensing
Modbus RTU port	1 x Serial EIA485 Plug-in screw terminal block (2 poles) A, B Compatible with Modbus RTU EIA-485 networks	Isolation voltage	1500 VDC
AC unit port	1 x Specific connector Specific cable included	Isolation resistance	1000 MΩ
Switch 1 (SW1)	1 x DIP-Switch for AC indoor unit's features	Protection	IP20 (IEC60529)
Switch 3 (SW3)	1 x DIP-Switch for Modbus RTU settings	LED indicators	1 x Onboard LED - Operational status
Switch 4 (SW4)	1 x DIP-Switch for extra functions		

### 4. Connections

ME-AC-MBS-1 connects directly to the indoor unit connector **CN105**. Use the *EIA485* connector in the ME-AC-MBS-1 to connect to the Modbus network.

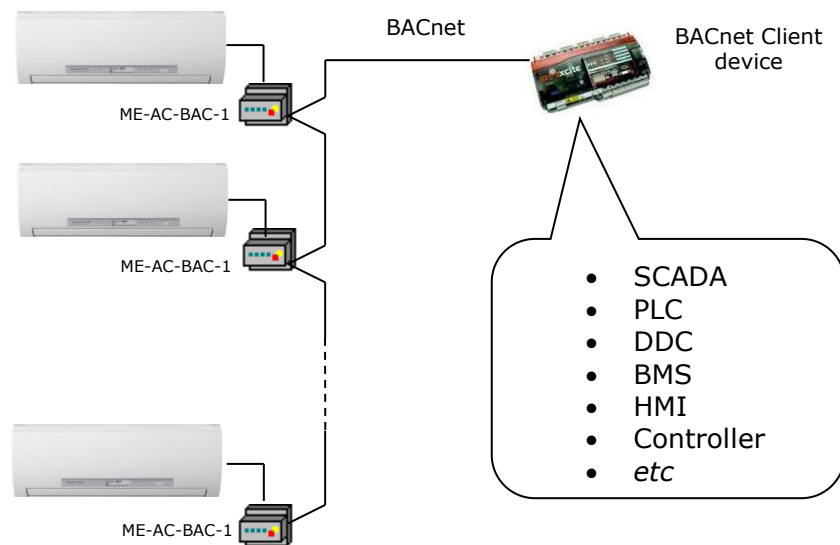




# IntesisBox®

## ME-AC-BAC-1

### BACnet MS/TP & BACnet IP Server for Mitsubishi Electric Air Conditioners (Domestic Line, Mr Slim and City Multi)



The ME-AC-BAC-1 interface allows a complete and natural integration of **Mitsubishi Electric** air conditioners into either BACnet IP or MS/TP networks. Compatible with Domestic (RAC), Mr Slim and City Multi line models commercialized by MITSUBISHI ELECTRIC.

- Reduced dimensions. 93 x 53 x 58 mm.
- Quick and easy installation. *Mountable on DIN rail, wall, or even inside the indoor unit in some models of AC.*
- External power not required.
- Direct connection to BACnet networks. ME-AC-BAC-1 is a BACnet MS/TP or a BACnet IP server (depending on configuration).
- Direct connection to the AC indoor unit.
- Total Control and Supervision. Real states of the AC unit's internal variables.
- Allows using simultaneously the IR and wired remote controls and BACnet.

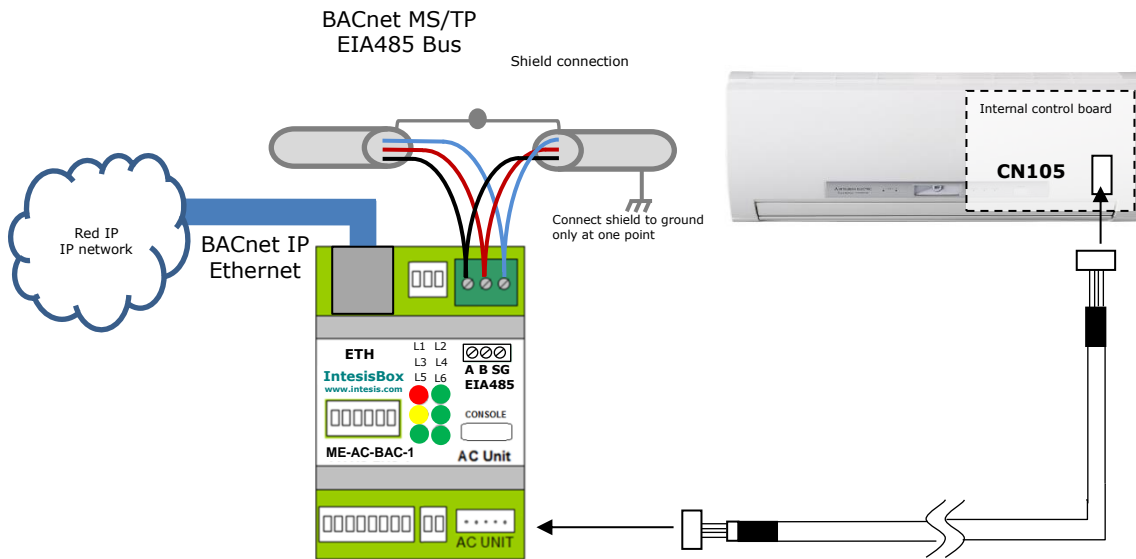
## 1. BACnet Interface (Member Objets)

Object-name	Description	Object-type	Object-instance
ME-AC-BAC-1	Mitsubishi Electric AC Interface	Device	246000*
OnOff_status		BI	0
OnOff_command		BO	0
Mode_status		MI	0
Mode_command		MO	0
SetPoint_status		AI	0
SetPoint_command		AO	0
FanSpeed_status		MI	1
FanSpeed_command		MO	1
AirDirectionUD_status		MI	2
AirDirectionUD_command		MO	2
AirDirectionLR_status		MI	3
AirDirectionLR_command		MO	3
RoomTemperature		AI	1
ErrorCode		AI	2
ErrorCodeM		MI	4
ErrorActive		BI	1
OnTimeCounter		AV	0
Occupancy		MV	0
OccupiedCoolSetPoint		AV	1
OccupiedHeatSetPoint		AV	2
UnoccupiedCoolSetPoint		AV	3
UnoccupiedHeatSetPoint		AV	4
OccupancyContinuousCheck		BV	0
UnoccupiedDeadbandAction		BV	1
LockRemoteControl		BV	2

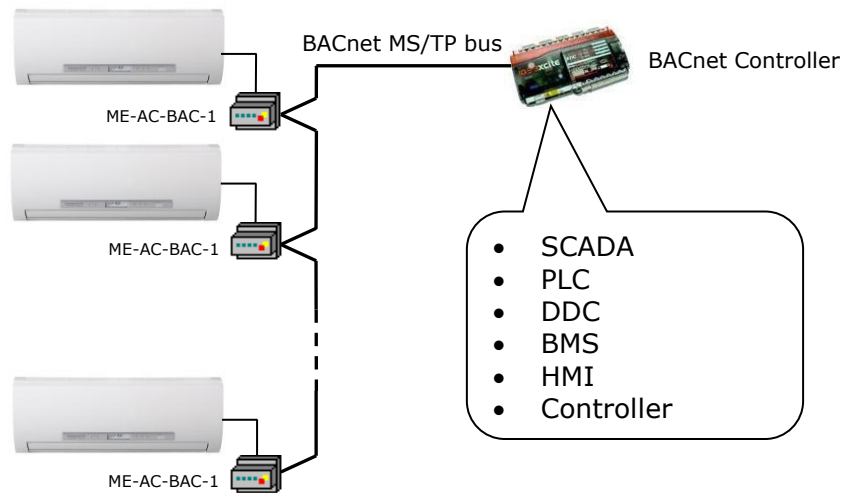
\* Configurable from BACnet side, the device configuration tool and the switch configuration. Check the user manual for more information.

## 2. Connections

ME-AC-BAC-1 connects directly to the indoor unit connector using the **CN105**<sup>1</sup> and to the BACnet side using BACnet IP or BACnet MS/TP (See picture below).



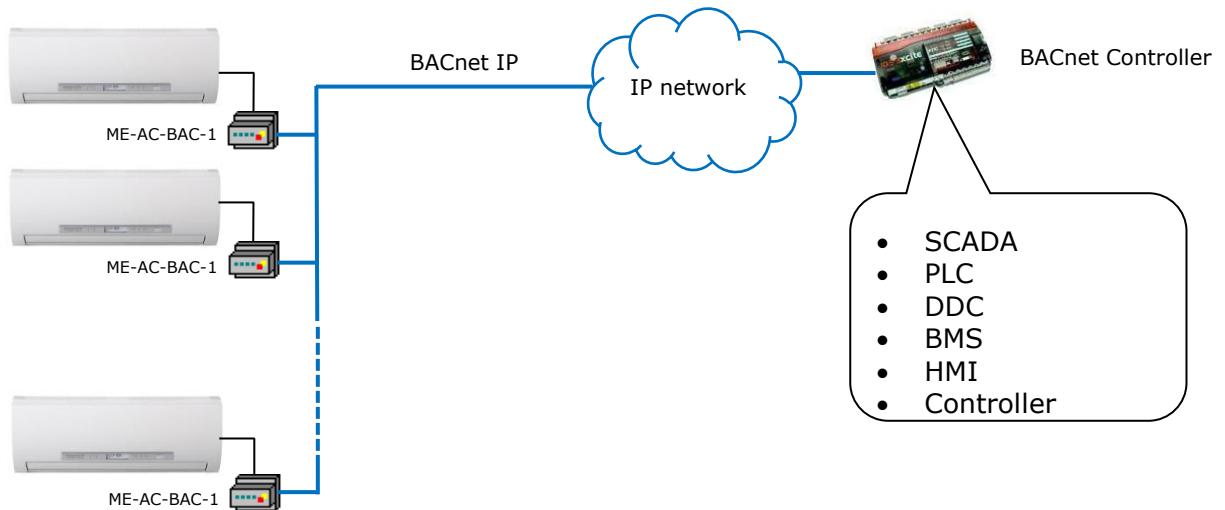
### 2.1 Connection example to BACnet MS/TP



**BACnet MS/TP installation sketch**

<sup>1</sup> CN92 in some models

## 2.2 Connection example to BACnet IP



**BACnet IP installation sketch**

## 3. List of compatible Mitsubishi Electric AC indoor units.

A list of Mitsubishi Electric indoor unit model references compatible with ME-AC-BAC-1 and their available features can be found at:

[http://intesis.com/pdf/IntesisBox\\_ME-AC-xxx-1\\_AC\\_Compatibility.pdf](http://intesis.com/pdf/IntesisBox_ME-AC-xxx-1_AC_Compatibility.pdf)

## 4. Technical Specifications

<b>Enclosure</b>	Plastic, type PC (UL 94 V-0). Dimensions: 93mm x 53mm x 58mm. Weight: 85 g
<b>Color</b>	Light Grey. RAL 7035.
<b>Terminal wiring (for power supply and low-voltage signals)</b>	Per terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5 ... 2.5mm <sup>2</sup> 2 cores: 0.5 ... 1.5mm <sup>2</sup> 3 cores: not permitted
<b>Console Port</b>	Mini USB port for console usage
<b>Mounting</b>	Wall. DIN rail EN60715 TH35.
<b>BACnet MS/TP port</b>	1 x EIA485 Plug-in screw terminal block (2 poles + GND)
<b>BACnet IP port</b>	1 x Ethernet 10/100BT RJ45.
<b>LED indicators</b>	6 x Gateway/Communication status
<b>Operational temperature</b>	0°C to +70°C
<b>Operational humidity</b>	5% to 95%, non-condensing
<b>Isolation Voltage</b>	4000 VDC (between AC unit and EIA-485) 1000 VDC (between AC unit and console)
<b>Protection</b>	IP20 (IEC60529).
<b>RoHS conformity</b>	Compliant with RoHS directive (2002/95/CE).
<b>Certifications</b>	CE conformity to EMC directive (2004/108/EC) and Low-voltage directive (2006/95/EC) EN 61000-6-1 ;EN 61000-6-3; EN 60950-1; EN 50491-3  This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference 2) This device must accept any interference received, including interference that may cause undesired operation.

## 5. Dimensions and connections

