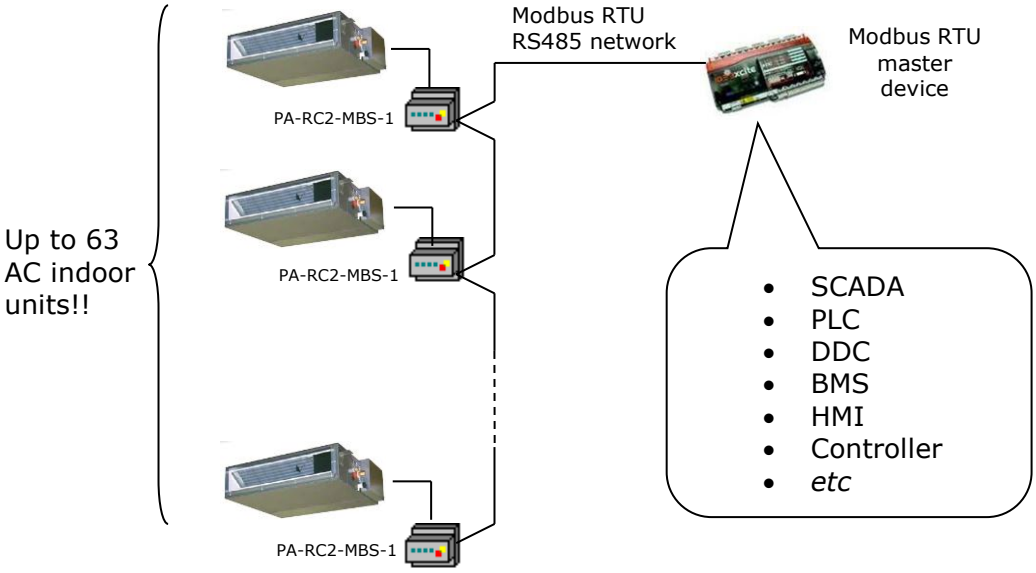
IntesisBox®
PA-RC2-MBS-1

Modbus Interface for PANASONIC Air Conditioners
(PACi & ECOi)



The PA-RC2-MBS-1 interface allows a complete and natural integration of ***Panasonic*** air conditioners into Modbus RTU (RS-485) networks. Compatible with all PACi and ECOi models commercialized by Panasonic

- 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 MODBUS RTU (RS-485) networks. Up to 63 PA-RC2-MBS-1 devices can be connected in the same network. PA-RC2-MBS-1 is a Modbus slave device.
- Direct connection to the AC indoor unit.
- 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 the IR and wired remote controls and MODBUS RTU.

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1. Modbus Interface

1.1 Modbus Functions

PA-RC2-MBS-1 implements the following standard MODBUS functions:

- 3: Read Holding Registers
- 4: Read Input Registers
- 6: Write Single Register
- 16: Write Multiple Registers (Although 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 using this function for writes).

1.2 Modbus Communication parameters

PA-RC2-MBS-1 implements a MODBUS RTU (slave) interface, to be connected to an RS-485 line. The communication parameters are:

- 8N1 communication (8 data bits, no parity and 1 stop bit)
- Configurable baudrates
  - 2400 bps
  - 4800 bps
  - 9600 bps (default)
  - 19200 bps

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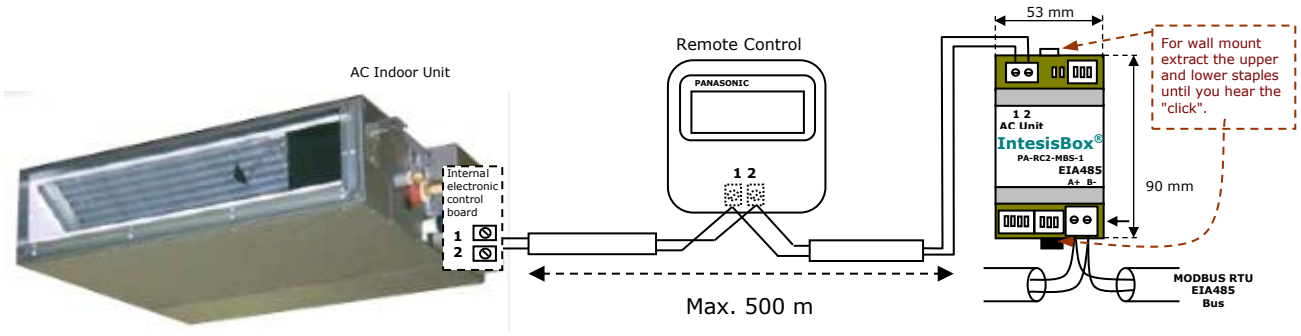
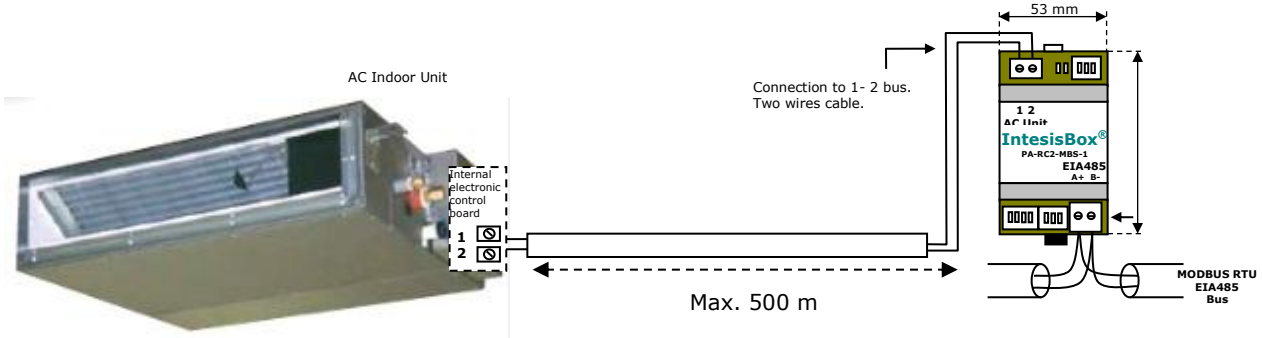
2. Connections

PA-RC2-MBS-1 can be used with Panasonic Remote Controllers or without them. Use the EIA485 connector in the PA-RC2-MBS-1 to connect to the Modbus network.

- PA-RC2-MBS-1 with Panasonic Remote Controller



- PA-RC2-MBS-1 without Panasonic Remote Controller



3. Modbus Signals

3.1 Control and status registers

Register Addr (protocol address)	Register Addr (PLC address)	R/W	Description
0	1	R/W	AC unit On/Off ▪ 0: Off ▪ 1: On
1	2	R/W	AC unit Mode ▪ 0: Auto ▪ 1: Heat ▪ 2: Dry ▪ 3: Fan ▪ 4: Cool
2	3	R/W	AC unit Fan Speed ▪ 0: Auto ▪ 1: Low ▪ 2: Mid ▪ 3: High
3	4	R/W	AC unit Vane Position

			▪ 1: POS1 (Horizontal) ▪ 2: POS2 (Horizontal) ▪ 3: POS3 (Med) ▪ 4: POS4 (Vert) ▪ 5: POS5 (Vert) ▪ 10: SWING
4	5	R/W	AC unit Temperature Setpoint ▪ 16..32 (ºC) ▪ 61..90 (ºF)
5	6	R	AC unit Ambient Temperature
6	7	R/W	Window Contact ▪ 0: Closed ▪ 1: Open
7	8	--	Reserved
8	9	R/W	Remote Command Disablement ▪ 0: Remote Command enabled ▪ 1: Remote Command disabled
9	10	R/W	AC unit Operation Time[1] ▪ 0..65535 (hours). Counts the time the AC unit is in "On" state.
10	11	R	AC unit Alarm Status ▪ 0: No alarm condition ▪ 1: Alarm condition
11	12	R	Error Code

3.2 Configuration Registers

Register Addr (protocol address)	Register Addr (PLC address)	R/W	Description
12	13	R/W	Reserved
13	14	R/W	"Open Window" switch-off timeout ▪ 0..30 (minutes) ▪ Factory setting: 30 (minutes)
14	15	R	Modbus RTU baud-rate (bps) ▪ 2400 ▪ 4800 ▪ 9600 ▪ 19200
15	16	R	Device's Modbus slave address ▪ 1..63
21	22	R	Max number of fan speeds ▪ 2 ▪ 3
49	50	R	Device Identification
50	51	R	Software version

All registers are of type "16-bit unsigned Holding Register", in standard ModBus big endian notation.

4. Technical Specifications

Dimensions:	*93 x 53 x 58 mm*
Weight:	*85 g*
Operating Temperature:	*-40 . . . 85ºC*
Stock Temperature:	*-40 . . . 85ºC*
Operating Humidity:	*<95% RH, non-condensing*
Stock Humidity:	*<95% RH, non-condensing*
Isolation voltage:	*1000 VDC*
Isolation resistance:	*1000 MΩ*
Modbus Media:	*Compatible with Modbus RTU - RS485 networks*

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