



FJ-RC-MBS-1

v.2.5

Modbus RTU (EIA-485) Interface for Fujitsu air conditioners.

User Manual

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r2.1 EN

Order Codes:

FJ-RC-MBS-1: Modbus RTU Interface for Fujitsu air conditioners

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1. Presentation

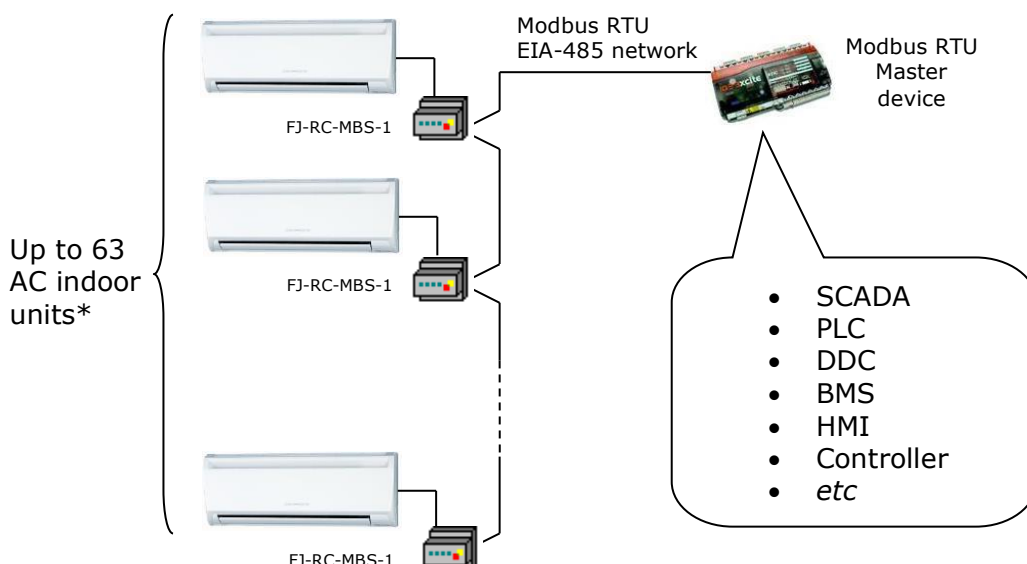


The FJ-RC-MBS-1 interfaces allow a complete and natural integration of **Fujitsu** air conditioners into Modbus RTU (EIA-485) networks.

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 indoor unit of AC.

- External power not required.
- Direct connection to Modbus RTU (EIA-485) networks. Up to 63 FJ-RC-MBS-1 devices can be connected in the same network.
FJ-RC-MBS-1 is a Modbus slave device.
- Direct connection to the AC indoor unit. Up to 16 AC indoor units can be connected to FJ-RC-MBS-1, controlling them as one (not individually).
- Configuration from both on-board DIP-switches and Modbus RTU.
- Total Control and Supervision.
- Real states of the AC unit's internal variables.
- Allows simultaneous use of the AC's remote controls and Modbus RTU.



* Up to 63 IntesisBox devices can be installed in the same Modbus RTU bus. However, depending on the configured speed, the installation of Modbus Repeaters may be required

2. Connection

The interface comes with a plug-in terminal block of 3 poles to establish direct connection with the AC indoor unit. It comes as well with a plug-in terminal block of 2 poles to establish direct connection with the Modbus RTU EIA-485 network.

2.1 Connect to the AC indoor unit

The FJ-RC-MBS-1 connects directly to the Fujitsu BWR Bus, which is not provided within the interface. Depending on which controllers are available, the recommended connection methods are the following ones (details in Figure 2. 1):

- **Wired remote control available.** Connect the gateway as Slave in parallel with the wired Remote Controllers (Controller acts as Master).
- **No remote control available** Connect the gateway directly to the BWR bus of the indoor unit as Master when there is no Fujitsu Remote Controller.

Maximum BWR bus length is 500 meters / 1,640.42 ft. The bus has no polarity sensitivity.

Important: If a wired remote controller of the AC manufacturer is connected in the same bus, communication may shut down.

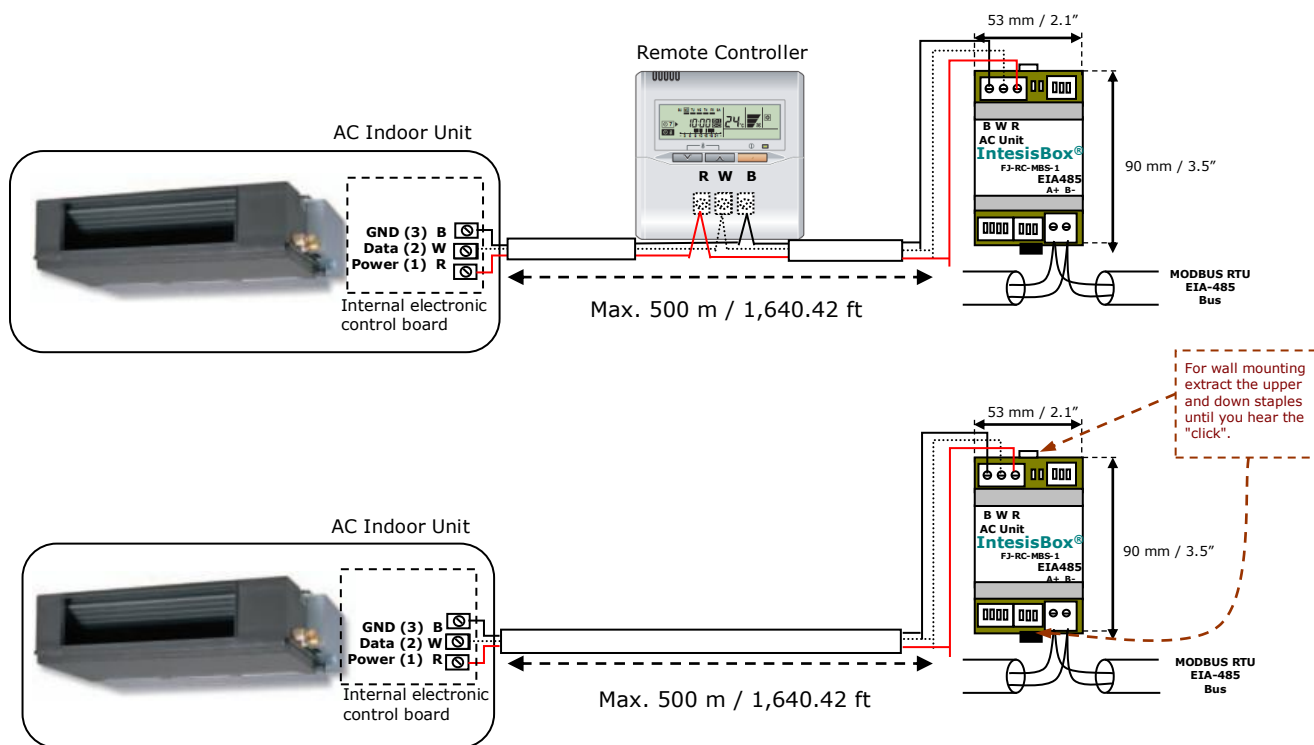


Figure 2. 1 FJ-RC-MBS-1 connection diagram

2.2 Connection to the EIA-485 bus

Connect the EIA-485 bus wires to the plug-in terminal block (the one of two poles) of FJ-RC-MBS-1 and keep the polarity on this connection (A+ and B-). Make sure that the maximum distance to the bus is 1,200 meters (3,937 ft). Loop or star typologies are not allowed in the case of the EIA-485 bus. A terminator resistor of 120Ω must be present at each end of the bus to avoid signal reflections. The bus needs a fail-safe biasing mechanism (see section 4.6 for more details).

3. Quick Start Guide


1. Disconnect the air conditioning from the Mains Power.
2. Attach the interface next to the AC indoor unit (wall mounting) following the instructions of the diagram below or install it inside the AC indoor unit (respect the safety instructions given).
3. Connect the BWR bus between the interface and the AC indoor unit following the instructions of the diagram. Screw each bare cable end in the corresponding BWR terminals of each device.
4. Connect the EIA-485 bus to the connector *EIA485* of the interface.
5. Close the AC indoor unit.
6. Check the DIP-Switch configuration of the IntesisBox interface and make sure it matches the current installation's parameters (see section 4.3).

By default, the interface is set to:

- Modbus Slave Address → 1
- Modbus baud rate → 9600 bps



These parameters can be modified from SW4 and SW3 DIP-Switches.

All other switch positions are set at low level (Off position ) by default.

NOTE: All changes on the DIP-Switch configuration require a system power cycle to be applied.

7. Connect the AC system to Mains Power.

IMPORTANT: The IntesisBox interface requires to be connected to the AC unit (powered) to start communicating.

4. Modbus Interface Specification

4.1 Modbus physical layer

FJ-RC-MBS-1 implements a Modbus RTU (Slave) interface, to be connected to an EIA-485 line. It performs 8N2 communication (8 data bits, no parity and 2 stop bit) with several available baud rates (2400 bps, 4800 bps, 9600 bps -default-, 19200 bps, 38400 bps, 57600 bps, 76800 bps and 115200 bps). It also supports 8N1 communication (8 data bits, no parity and 1 stop bit).

4.2 Modbus Registers

All registers are type "16-bit unsigned Holding Register" and they use the *Modbus big endian* notation.

4.2.1 Control and status registers

| Register Address (protocol address) | Register Address (PLC address) | R/W | Description |
|-------------------------------------|--------------------------------|-----|--|
| 0 | 1 | R/W | AC unit On/Off <ul style="list-style-type: none"> ▪ 0: Off ▪ 1: On |
| 1 | 2 | R/W | AC unit Mode ¹ <ul style="list-style-type: none"> ▪ 0: Auto ▪ 1: Heat ▪ 2: Dry ▪ 3: Fan ▪ 4: Cool |
| 2 | 3 | R/W | AC unit Fan Speed ¹ <ul style="list-style-type: none"> ▪ 1: Low ▪ 2: Mid ▪ 3: High |
| 3 | 4 | R/W | AC unit Vane Position ¹ <ul style="list-style-type: none"> ▪ 1: Position-1 (Horizontal) ▪ 2: Position-2 (Horizontal) ▪ 3: Position-3 (Medium) ▪ 4: Position-4 (Vertical) ▪ 5: Position-5 (Vertical) ▪ 10: Swing |
| 4 | 5 | R/W | AC unit Temperature Setpoint ^{1,2,3} <ul style="list-style-type: none"> ▪ -32768 (Initialization value) ▪ 16..30 (°C) (0 = undetermined) ▪ 61..86 (°F) (0 = undetermined) |

¹ Available values will depend on the AC unit mode. Check the AC unit model functions in its user manual to know the possible values for this register.

² Magnitude for this register can be adjusted to Celsius x 1°C, Celsius x 10°C (default) or Fahrenheit. See section 4.2.3 for more information.

³ It is not possible turn to x10 the value shown in Fahrenheit.

| Register Address (protocol address) | Register Address (PLC address) | R/W | Description |
|-------------------------------------|--------------------------------|-----|---|
| 5 | 6 | R | AC unit Temperature reference ^{1,2,3,6} <ul style="list-style-type: none"> 16..30 (°C) (0 = undetermined) 61..86 (°F) (0 = undetermined) 0x8000 There is no temperature sent from the Remote controller |
| 6 | 7 | R/W | Window Contact <ul style="list-style-type: none"> 0: Closed (Default) 1: Open |
| 7 | 8 | R/W | FJ-RC-MBS-1 Disablement ⁴ <ul style="list-style-type: none"> 0: FJ-RC-MBS-1 enabled (Default value) 1: FJ-RC-MBS-1 disabled |
| 8 | 9 | R/W | AC Remote Control Disablement ⁴ <ul style="list-style-type: none"> 0: Remote Control enabled (Default value) 1: Remote Control disabled |
| 9 | 10 | R/W | AC unit Operation Time ⁴ <ul style="list-style-type: none"> 0..65535 (hours). Counts the time the AC unit is in "On" state. |
| 10 | 11 | R | AC unit Alarm Status <ul style="list-style-type: none"> 0: No alarm condition 1: Alarm condition |
| 11 | 12 | R | Error Code ⁵ <ul style="list-style-type: none"> 0: No error present 65535(-1 if it is read as signed value): Error in the communication of FJ-RC-MBS-1 or Remote Controller with the AC unit. For any other error, see the table at the end of this document. |
| 22 | 23 | R/W | Indoor unit's ambient temperature from external sensor (at Modbus side) ^{1,2,3,6} <ul style="list-style-type: none"> -32768: (Initialization value). No temperature is being provided from an external sensor. Any other: (°C/x10°C/°F) |
| 23 | 24 | R | AC Real temperature setpoint ^{1,2,3,6} <ul style="list-style-type: none"> When no external temperature is provided, this read-only register will have the same value as register 5 (PLC addressing). In all cases, it will show the current setpoint in the indoor unit. 16..31°C (°C/x10°C) 60..92°F |
| 24 | 25 | R | Current AC max setpoint ^{1,2,3} <ul style="list-style-type: none"> -32768 (Initialization value) Ranges are specific from Manufacturer |
| 25 | 26 | R | Current AC min setpoint ^{1,2,3} <ul style="list-style-type: none"> -32768 (Initialization value) Ranges are specific from Manufacturer |
| 26 | 27 | R/W | AC unit Horizontal Vane Position ¹ <ul style="list-style-type: none"> 0: Auto (Default) 10: Swing |
| 27 | 28 | W | Up/Down Vane Pulse <ul style="list-style-type: none"> 1: Pulse |

⁴ This value is stored in non-volatile memory

⁵ See section 7 for possible error codes and their explanation

⁶ See section 4.2.3 for more information

| Register Address (protocol address) | Register Address (PLC address) | R/W | Description |
|-------------------------------------|--------------------------------|-----|---|
| 31 | 32 | R | Status (feedback) <ul style="list-style-type: none"> 0: Not active (Default value) 1: Active (A window is open) |
| 34 | 35 | W | Left/Right Vane pulse <ul style="list-style-type: none"> 1: Pulse |
| 64 | 65 | R/W | Economy <ul style="list-style-type: none"> 0: Disabled 1: Enabled |
| 65 | 66 | R | Input reference temperature ^{1,2,3} <ul style="list-style-type: none"> 0x8000: No temperature's value is being provided from an external sensor. No virtual temperature is being applied. Any other: (°C/x10°C/°F) |
| 81 | 82 | R | Error address <ul style="list-style-type: none"> Provides the indoor unit number which is providing error |
| 97 | 98 | R/W | Block Periodic Sendings ^{4,7,8} <ul style="list-style-type: none"> 0: Non-blocked (Default value) 1: Blocked |
| 98 | 99 | R | Master/Slave (gateway's role) <ul style="list-style-type: none"> 0: Slave 1: Master |

4.2.2 Configuration Registers

| Register Address (protocol address) | Register Address (PLC address) | R/W | Description |
|-------------------------------------|--------------------------------|-----|---|
| 13 | 14 | R/W | "Open Window" switch-off timeout ⁹ <ul style="list-style-type: none"> 0..30 (minutes) Factory setting: 30 (minutes) |
| 14 | 15 | R | Modbus RTU baud-rate <ul style="list-style-type: none"> 2400bps 4800bps 9600bps (Default) 19200bps 38400bps 57600bps 76800bps 115200bps |
| 15 | 16 | R | Modbus Slave Address <ul style="list-style-type: none"> 1..63 |
| 21 | 22 | R | Max number of fan speeds |
| 48 | 49 | R | Switch value |
| 49 | 50 | R | Device ID: 0x0D00 |
| 50 | 51 | R | Software version |

⁷ If the register is configured as "0:Non-blocked", all commands received from Modbus will be sent to the AC system. If "1: Blocked", commands from Modbus will only be sent to the AC system if they differ from the previous value.

⁸ This register applies to firmware version 2.5 onwards

⁹ Once window contact is open, a count-down to switch off the AC Unit will start from this configured value.

4.2.3 Considerations on Temperature Registers

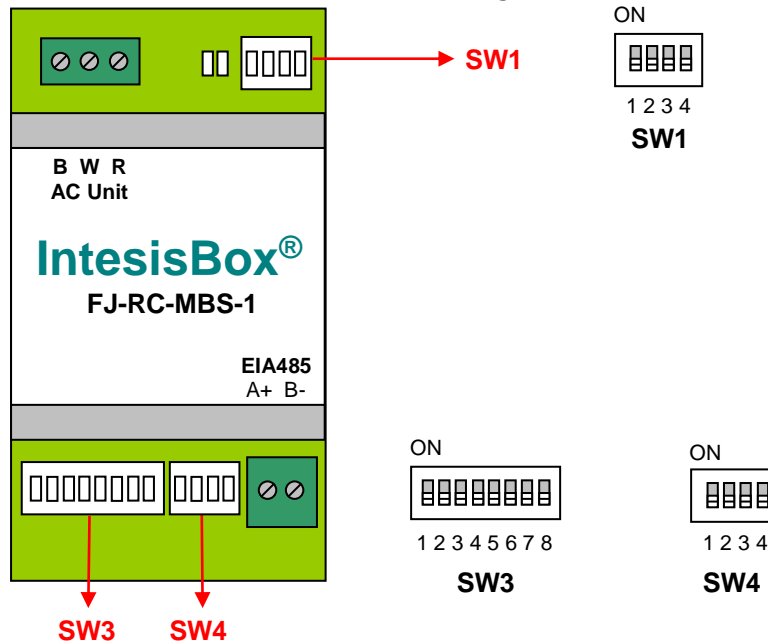
- **AC unit Temperature Setpoint (R/W)** (register 5 – in PLC addressing): This is the adjustable temperature setpoint meant to be required by the user. This register can be read (Modbus function 3 or 4) or written (modbus functions 6 or 16). A remote controller connected to the 3-wire bus of the Fujitsu indoor unit will report the same temperature setpoint value as this register.
- **AC unit external reference temperature (R/W)** (register 23 – in PLC addressing): This register allows providing an external temperature reference from Modbus side. If an external temperature is provided through this register, indoor unit will use it as reference for its temperature control loop.
 - This register will have no effect in those Fujitsu RAC / domestic line splits Air-Conditioning units – this is, those models requiring an additional communication accessory enabling communication with FJ-RC-MBS-1.
 - For this temperature to take effect it is required that the Fujitsu AC indoor unit is configured in such a way that it uses the "thermostat sensor in the remote controller" (this is, FJ-RC-MBS-1 will act as thermostat sensor providing a temperature sensor reading).
 - This configuration is done via a Fujitsu remote controller connected to the indoor unit (Function number "42" – setting value "1" / operation of Thermosensor button) and must be done by Fujitsu authorized installers at the time of the installation of the AC.
 - Register value after FJ-RC-MBS-1 startup is -32768, which means that no temperature reference is provided to the AC indoor unit. In that case, AC indoor unit will use its own return path temperature sensor as reference for its control loop.

Moreover, notice that temperature's values of all these four registers are expressed according to the temperature's format configured through its onboard DIP-Switches (See 4.3 "DIP-switch Configuration Interface"). These following formats are possible:

- **Celsius value:** Value in Modbus register is the temperature value in Celsius (i.e. a value "22" in the Modbus register must be interpreted as 22°C).
- **Decicelsius value:** Value in Modbus register is the temperature value in decicelsius (i.e. a value "220" in the Modbus register must be interpreted as 22.0°C).
- **Fahrenheit value:** Value in Modbus register is the temperature value in Fahrenheit (i.e. a value "72" in the Modbus register must be interpreted as 72°F (~22°C)).

4.3 DIP-switch Configuration Interface

All the configuration values on FJ-RC-MBS-1 can be written and read from Modbus interface. Otherwise, some of them can also be setup from its on-board DIP-switch interface. The device has DIP-switches SW1, SW3 and SW4 on the following locations:



The following tables apply to the interface's configuration through DIP-switches:

SW1 – AC indoor unit's features

| SW1-P1..4 | Description |
|-----------|--|
| | Slave - A Fujitsu Controller must be present in BWR bus, configured as Master (Default value) |
| | Master - Fujitsu Controller not needed in BWR bus. If it exists, it must be configured as Slave |
| | Keep the switch into this position (Default value) |
| | Do not turn the switch into this position (not applicable) |
| | Machine type: RAC inverter model G series, VRF J-II, VRF V-II or VRF VR-II ¹⁰ (Default value) |
| | Machine type: RAC inverter, RAC non-inverter, VRF V, VRF S or VRF J |
| | Keep the switch into this position (Default value) |
| | Do not turn the switch into this position (not applicable) |

Table 4.1 SW1: AC indoor unit's features

¹⁰ * G series stands for units that include a 'G' just before the power number in its reference. E.g.: ASYG09LTCA

SW3/SW4 – Baud rate configuration



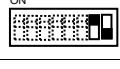



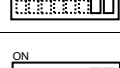

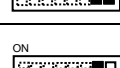

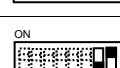

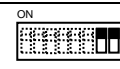



| SW3-P7..8 | SW4-P3 | Description |
|--|--|-------------------------|
|  |  | 2400bps |
|  |  | 4800bps |
|  |  | 9600bps (Default value) |
|  |  | 19200bps |
|  |  | 38400bps |
|  |  | 57600bps |
|  |  | 76800bps |
|  |  | 115200bps |

Table 4.2 SW3-SW4: Modbus baud rate

SW4 – Degrees/Decidegrees (x10), temperature magnitude (°C/°F) and EIA-485 termination resistor.







| SW4-P1..2-4 | Description |
|---|--|
|  | Temperature values in Modbus register are represented in degrees (x1) (Default value) |
|  | Temperature values in Modbus register are represented in decidegrees (x10) |
|  | Temperature values in Modbus register are represented in Celsius degrees (Default value) |
|  | Temperature values in Modbus register are represented in Fahrenheit degrees |
|  | EIA-485 bus without termination resistor (Default value) |
|  | Internal termination resistor of 120Ω connected to EIA-485 bus |

Table 4.3 SW4: Temperature and termination resistor configuration

SW3 – Modbus Slave address

| Add | SW3-P1..6 | Add | SW3-P1..6 | Add | SW3-P1..6 | Add | SW3-P1..6 | Add | SW3-P1..6 |
|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|
| 0 | | 13 | | 26 | | 39 | | 52 | |
| 1 | | 14 | | 27 | | 40 | | 53 | |
| 2 | | 15 | | 28 | | 41 | | 54 | |
| 3 | | 16 | | 29 | | 42 | | 55 | |
| 4 | | 17 | | 30 | | 43 | | 56 | |
| 5 | | 18 | | 31 | | 44 | | 57 | |
| 6 | | 19 | | 32 | | 45 | | 58 | |
| 7 | | 20 | | 33 | | 46 | | 59 | |
| 8 | | 21 | | 34 | | 47 | | 60 | |
| 9 | | 22 | | 35 | | 48 | | 61 | |
| 10 | | 23 | | 36 | | 49 | | 62 | |
| 11 | | 24 | | 37 | | 50 | | 63 | |
| 12 | | 25 | | 38 | | 51 | | | |

Table 4.4 SW3: Modbus slave address

4.4 Implemented Functions

FJ-RC-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 to write operations on more than 1 register with the same request, this means that length field should be always be 1 when this function is being used in case of writing)

The maximum number of registers that can be read in a single request is 100.

4.5 Device LED indicator

The device includes two LED indicators to show all the possible operational states. In the following table there are written the indicators which can be performed and their meaning.

L1 (green LED)

| Device status | LED indication | ON / OFF Period | Description |
|-----------------------------|----------------|-----------------------|--|
| During not normal operation | LED blinking | 500ms ON / 500ms OFF | Communication error |
| During normal operation | LED flashing | 100ms ON / 1900ms OFF | Normal operation (configured and working properly) |

L2 (red LED)

| Device status | LED indication | ON / OFF Period | Description |
|-----------------------------|----------------|-------------------|---------------|
| During not normal operation | LED Pulse | 3sec ON / --- OFF | Under voltage |

L1 (green LED) & L2 (red LED)

| Device status | LED indication | ON / OFF Period | Description |
|-----------------------------|----------------------------|----------------------|-----------------------|
| During normal operation | LED Pulse | 5sec ON / --- OFF | Device Start-up |
| During not normal operation | LED alternatively blinking | 500ms ON / 500ms OFF | Flash checksum not OK |

4.6 EIA-485 bus. Termination resistors and Fail-Safe Biasing mechanism

EIA-485 bus requires a 120Ω terminator resistor at each end of the bus to avoid signal reflections.

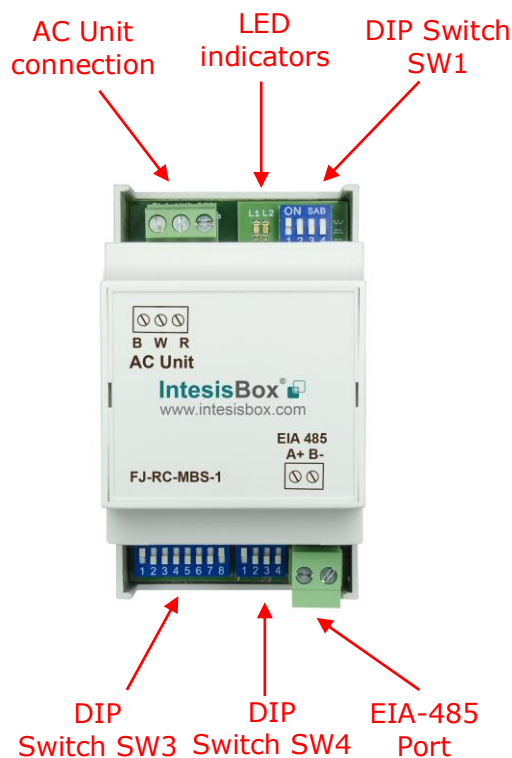
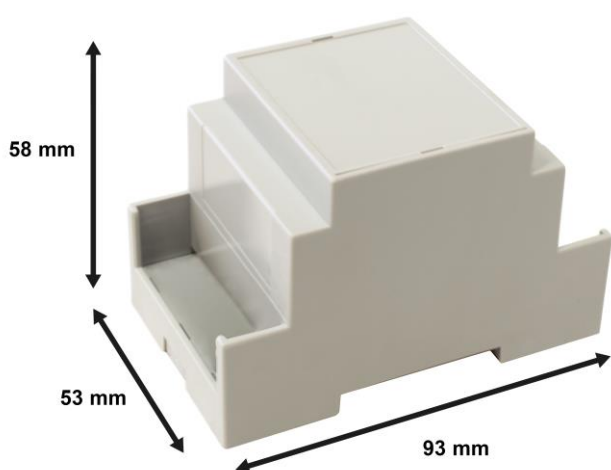
In order to prevent fail status detected by the receivers, which are "*listening*" the bus, when all the transmitters' outputs are in three-state (high impedance), it is also required a fail-safe biasing mechanism. This mechanism provides a safe status (a correct voltage level) in the bus when all the transmitters' outputs are in three-state. This mechanism must be supplied by the Modbus Master.

The FJ-RC-MBS-1 device includes an on-board terminator resistor of 120Ω that can be connected to the EIA-485 bus by using DIP-switch SW4.

Some Modbus RTU EIA-485 Master devices can provide also internal 120Ω terminator resistor and/or fail-safe biasing mechanism (Check the technical documentation of the Master device connected to the EIA-485 network in each case).

5. Mechanical and electrical 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 ² ... 2.5mm ² 2 cores: 0.5mm ² ... 1.5mm ² 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 BWR bus Plug-in screw terminal block (3 poles): B, W, R Compatible with Fujitsu networks | Isolation resistance | 1000 MΩ |
| Switch 1 (SW1) | 1 x DIP-Switch for AC features | Protection | IP20 (IEC60529) |
| Switch 3 (SW3) | 1 x DIP-Switch for Modbus RTU settings | LED indicators | 2 x Onboard LED - Operational status |
| Switch 4 (SW4) | 1 x DIP-Switch for extra functions | | |



6. List of supported AC Unit Types.

A list of Fujitsu indoor unit model's references compatible with FJ-RC-MBS-1 and its available features can be found on this link:

https://www.intesisbox.com/intesis/support/compatibilities/IntesisBox_FJ-RC-xxx-1_AC_Compatibility.pdf

7. Error Codes

To obtain the error which belongs to the Error Codes list, remember that it must be selected the right position of the DIP-switch SW1 (See Section 4.3). Here there are two lists. It must be chosen only one list depending on the system installed.

7.1 Intesis Codes

| Error Code Modbus | Error in Remote Controller | Error Description |
|-------------------|----------------------------|---|
| 0 | N/A | No active error |
| 65535 (-1) | N/A | Error in the communication of FJ-RC-MBS-1 or Remote Controller with the AC unit |

7.2 RAC and VRF J-II / V-II / VR-II series

| Error Code Modbus | Error in Remote Controller | System | Error Description |
|-------------------|----------------------------|---|--|
| 0 | 00 | RAC Inverter and Non Inverter | Wired remote controller error |
| 1 | 01 | | Indoor signal error |
| 2 | 02 | | Indoor room temperature sensor error |
| 3 | 03 | | Indoor room temperature sensor error |
| 4 | 04 | | Indoor heat exchanger temperature sensor (middle) error |
| 5 | 05 | | Indoor heat exchanger temperature sensor (middle) error |
| 6 | 06 | | Outdoor heat exchanger temperature sensor (outlet) error |
| 7 | 07 | | Outdoor heat exchanger temperature sensor (outlet) error |
| 8 | 08 | | Power voltage error |
| 9 | 09 | | Float switch operated |
| 10 | 0A | | Outdoor temperature sensor error |
| 11 | 0b | | Outdoor temperature sensor error |
| 12 | 0C | | Outdoor discharge pipe temperature sensor error |
| 13 | 0d | | Outdoor discharge pipe temperature sensor error |
| 14 | 0E | | Heat sink thermistor (Inverter) error |
| 15 | 0F | | Discharge temperature error |
| 17 | 11 | | Indoor unit EEPROM error |
| 18 | 12 | | Indoor fan error |
| 19 | 13 | | Indoor signal error |
| 20 | 14 | | Outdoor EEPROM error |
| 21 | 15 | | Compressor temperature sensor error |
| 22 | 16 | | Pressure switch abnormal, Pressure sensor error |
| 23 | 17 | | IPM protection |
| 24 | 18 | | CT error |
| 25 | 19 | | Active filter error |
| 26 | 1A | | INV voltage protection |
| 27 | 1b | | Compressor location error |
| 28 | 1C | | Outdoor fan error |
| 29 | 1d | | Outdoor unit computer communication error |
| | | 2-way valve temperature sensor error | |

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|-----|----|--|--|
| 30 | 1E | RAC Inverter and Non Inverter | 3-way valve temperature sensor error |
| 31 | 1F | | Connected indoor unit error |
| 32 | 20 | | Indoor MANUAL AUTO switch error |
| 33 | 21 | | reverse VDD permanent stop protection |
| 34 | 22 | | VDD permanent stop protection |
| 36 | 24 | | Excessive high pressure protection on cooling |
| 37 | 25 | | P.F.C. circuit error |
| 38 | 26 | | Indoor signal error |
| 39 | 27 | | Indoor signal error |
| 40 | 28 | | Indoor heat exchanger temperature sensor (inlet) error |
| 41 | 29 | | Outdoor heat exchanger temperature sensor (middle) error |
| 42 | 2A | | Power supply frequency detection error |
| 43 | 2b | | Compressor temperature error |
| 44 | 2C | | 4-way valve error |
| 45 | 2d | | Heat sink thermistor P.F.C. error |
| 46 | 2E | Indoor unit damper error | |
| 47 | 2F | Inverter error | |
| 48 | 30 | Low pressure error | |
| 49 | 31 | Refrigerant circuit address set-up error | |
| 50 | 32 | Master unit, Slave unit set-up error | |
| 51 | 33 | Connected the indoor number set-up error | |
| 52 | 34 | P.F.C. printed circuit board error | |
| 53 | 35 | Indoor fan 2 error | |
| 54 | 36 | Control box thermistor error | |
| 55 | 37 | RAC Inverter and Non Inverter | Indoor unit CT error |
| 56 | 38 | | Indoor fan motor 1 driving circuit error |
| | | | Indoor fan motor 2 driving circuit error |
| 117 | 11 | RAC Inverter Models G series | Serial communication error between indoor/outdoor units |
| 118 | 12 | | Remote controller communication error |
| 119 | 13 | | Communication error between outdoor units |
| 120 | 14 | | Network communication error |
| 121 | 15 | | Scan error |
| 122 | 16 | | Peripheral unit communication error |
| 123 | 17 | | Electricity charge apportionment error |
| 133 | 21 | | Indoor unit initial setting error |
| 134 | 22 | | Indoor unit capacity abnormal |
| 135 | 23 | | Incompatible series connection error |
| 136 | 24 | | Connection unit number error |
| 137 | 25 | | Connection pipe length error |
| 138 | 26 | | Indoor unit address setting error |
| 139 | 27 | | Master/slave unit setting error |
| 140 | 28 | | Other setting error |
| 141 | 29 | Connection unit number error in wired remote controller system | |
| 149 | 31 | VRF J-II/V-II/VR-II Series | Indoor unit power supply abnormal |
| 150 | 32 | | Indoor unit main PCB error |
| 151 | 33 | | Indoor unit display PCB error |
| 152 | 34 | | Power relay error |
| 153 | 35 | | Indoor unit manual auto switch error |
| 154 | 36 | | Heater relay error |
| 155 | 37 | | Indoor unit transmission PCB error |
| 156 | 38 | | Network convertor PCB error |

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|-----|----|--|--|
| 157 | 39 | | Indoor unit power supply circuit error |
| 158 | 3A | | Indoor unit communication circuit (wired remote controller) error |
| 165 | 41 | | Indoor unit room temp. thermistor error |
| 166 | 42 | | Indoor unit heat ex. temp. thermistor error |
| 167 | 43 | | Humidity sensor error |
| 168 | 44 | | Light sensor error |
| 169 | 45 | | Gas sensor error |
| 170 | 46 | | Float sensor error |
| 171 | 47 | | Water temperature sensor error |
| 172 | 48 | | Warm water flow rate sensor error |
| 173 | 49 | | Heater sensor error |
| 181 | 51 | | Indoor unit fan motor 1 error |
| 182 | 52 | | Indoor unit coil (expansion valve) error |
| 183 | 53 | | Indoor unit water drain abnormal |
| 184 | 54 | | Air cleaning function error |
| 185 | 55 | | Filter cleaning function error |
| 186 | 56 | | Water circulation pump error |
| 187 | 57 | | Indoor unit damper error |
| 188 | 58 | | Indoor unit intake grille position error |
| 189 | 59 | | Indoor unit fan motor 2 error |
| 195 | 5U | | Indoor unit miscellaneous error |
| 197 | 61 | | Outdoor unit power supply abnormal |
| 198 | 62 | | Outdoor unit main PCB error |
| 199 | 63 | | Outdoor unit inverter PCB error |
| 200 | 64 | | Outdoor unit active filter/PFC circuit error |
| 201 | 65 | | Outdoor unit IPM error |
| 202 | 66 | | Convertor distinction error |
| 203 | 67 | | Outdoor unit power short interruption error (protective operation) |
| 204 | 68 | | Outdoor unit magnetic relay error |
| 205 | 69 | | Outdoor unit transmission PCB error |
| 206 | 6A | | Outdoor unit display PCB error |
| 213 | 71 | | Outdoor unit discharge temp. thermistor error |
| 214 | 72 | | Outdoor unit compressor temp. thermistor error |
| 215 | 73 | | Outdoor unit heat ex. temp. thermistor error |
| 216 | 74 | | Outside air temp. thermistor error |
| 217 | 75 | | Outdoor unit suction gas temp. thermistor error |
| 218 | 76 | | Outdoor unit operating valve thermistor error |
| 219 | 77 | | Outdoor unit heat sink temp. thermistor error |
| 220 | 78 | | Expansion valve temperature sensor error |
| 229 | 81 | | Receiver liquid level detection sensor error |
| 230 | 82 | | Outdoor unit sub-cool heat ex. gas temp. thermistor error |
| 231 | 83 | | Outdoor unit liquid pipe temp. thermistor error |
| 232 | 84 | | Outdoor unit current sensor error |
| 233 | 85 | | Fan motor current sensor error |
| 234 | 86 | | Outdoor unit pressure sensor error |
| 235 | 87 | | Oil sensor error |
| 245 | 91 | | Outdoor unit compressor 1 error |
| 246 | 92 | | Outdoor unit compressor 2 error |
| 247 | 93 | | Outdoor unit compressor start up error |
| 248 | 94 | | Outdoor unit trip detection |
| 249 | 95 | | Outdoor unit compressor motor control error |
| 250 | 96 | | Open loop error(Field-weakening relevant) |
| 251 | 97 | | Outdoor unit fan motor 1 error |

RAC
Inverter
Models G
series

VRF
J-II/V-
II/VR-II
Series

RAC
Inverter
Models G
series

VRF
J-II/V-
II/VR-II
Series

| | | | |
|-----|----|------------|---|
| 252 | 98 | | Outdoor unit fan motor 2 error |
| 253 | 99 | | Outdoor unit 4-way valve error |
| 254 | 9A | | Outdoor unit coil (expansion valve) error |
| 259 | 9U | | Outdoor unit miscellaneous error |
| 261 | A1 | | Outdoor unit discharge temperature 1 error |
| 262 | A2 | | Outdoor unit discharge temperature 2 error |
| 263 | A3 | | Outdoor unit compressor temperature error |
| 264 | A4 | | Outdoor unit pressure error 1 |
| 265 | A5 | | Outdoor unit pressure error 2 |
| 266 | A6 | | Outdoor unit heat exchanger temperature error |
| 267 | A7 | | Suction temperature abnormal |
| 268 | A8 | | Poor refrigerant circulation |
| 269 | A9 | | Current overload error |
| 270 | AA | | Outdoor unit special operation error |
| 271 | AC | | Ambient temperature error |
| 272 | AF | | Out of the possible operation range |
| 273 | AJ | | Freeze protection operated |
| 277 | C1 | | Peripheral unit main PCB error |
| 278 | C2 | | Peripheral unit transmission PCB error |
| 279 | C3 | | Peripheral unit PCB 1 error |
| 280 | C4 | RAC | PCB 2 error |
| 281 | C5 | Inverter | PCB 3 error |
| 282 | C6 | Models G | PCB 4 error |
| 283 | C7 | series | PCB 5 error |
| 284 | C8 | | Peripheral unit input device error |
| 285 | C9 | VRF | Display device error |
| 286 | CA | J-II/V- | EEPROM error |
| 287 | CC | II/VR-II | |
| 288 | CF | Series | Peripheral unit sensor error |
| 289 | CJ | | Peripheral unit external connector error (USB memory) |
| 293 | F1 | | Other parts error |
| 294 | F2 | | System tool software error |
| 295 | F3 | | System tool adaptor error |
| 296 | F4 | | System tool interface error |
| 309 | J1 | | System tool environment error |
| 310 | J2 | | RB unit error |
| 311 | J3 | | Branch boxes error |
| 312 | J4 | | Total heat exchanging, ventilation unit error |
| 313 | J5 | | Domestic hot water unit error |
| | | | Zone control interface error |

7.3 VRF V / S / J Series

| Error Code Modbus | Error in Remote Controller | System | Error Description |
|-------------------|----------------------------|-----------------------------------|------------------------------|
| 0 | 00 | VRF V / S / J Series | No Error |
| 2 | 02 | | Model information Error |
| 4 | 04 | | Power frequency Error |
| 6 | 06 | | EEPROM access Error |
| 7 | 07 | | EEPROM deletion Error |
| 9 | 09 | | Room sensor Error |
| 10 | 0A | | Heat Ex. Middle Sensor Error |
| 11 | 0b | | Heat Ex. Inlet sensor Error |
| 12 | 0C | | Heat Ex. Outlet sensor Error |

| | | | |
|----|----|-----------------------------------|---|
| 13 | 0d | VRF V / S / J Series | Blower temperature thermistor Error |
| 17 | 11 | | Drain Error |
| 18 | 12 | | Room temperature Error |
| 19 | 13 | | Indoor fan motor Error |
| 20 | 18 | | Standard wired remote Error |
| 31 | 1F | | Standard wired token Error |
| 32 | 20 | | Network communication Error |
| 33 | 21 | | Node setting error |
| 34 | 32 | | Communication Error between Main PCB & Transmission PCB |
| | | | Outdoor unit Error |

The devices with Software Version 2.1 (See Register Address PLC 51) and all previous versions backwards, which are connected to a model RAC of the G series, VRF J-II, VRF V-II or VRF VR-II, require adding 100 to the error code that has been shown. For example, if the error shown is 17, the error which belongs to the list is 17+100=**117**.

In case to detect an error code not listed, contact your closest Fujitsu technical support service.