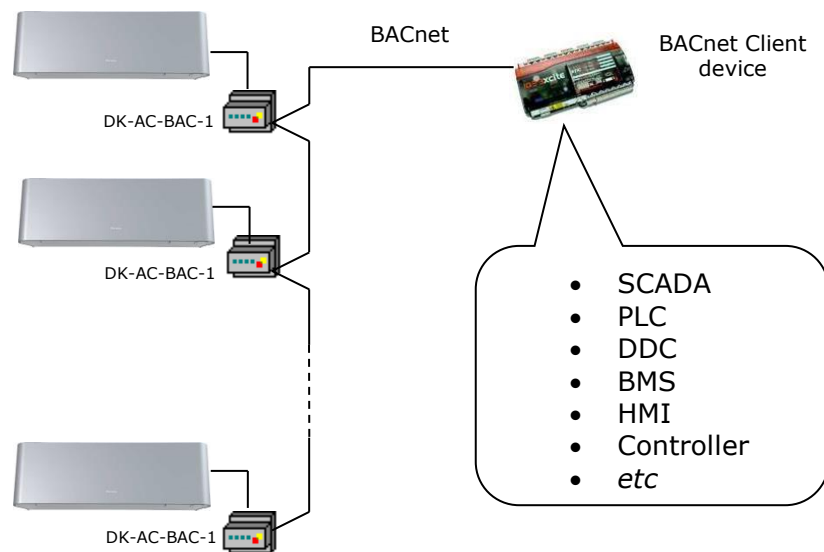# IntesisBox®
DK-AC-BAC-1

BACnet MS/TP & BACnet IP Server for Daikin Air Conditioners
(Domestic Line)

The DK-AC-BAC-1 interface allows a complete and natural integration of **Daikin** air conditioners into either BACnet IP or MS/TP networks. Compatible with Domestic (RAC) line models commercialized by DAIKIN

- 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. DK-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.

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1. BACnet Interface (Member Objets)

| Object-name	Description	Object-type	Object-instance
DK-AC-BAC-1	Daikin 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
ErrorCode		AI	2
ErrorCodeM		MI	4
ErrorActive		BI	1
OnTimeCounter		AV	0
LockRemoteControl		BV	2
Humidification_status		MI	8
Humidification_command		MO	6

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

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2. Connections

DK-AC-BAC-1 connects directly to the indoor unit connector using the **S-21** and to the BACnet side using BACnet IP or BACnet MS/TP (See picture below).
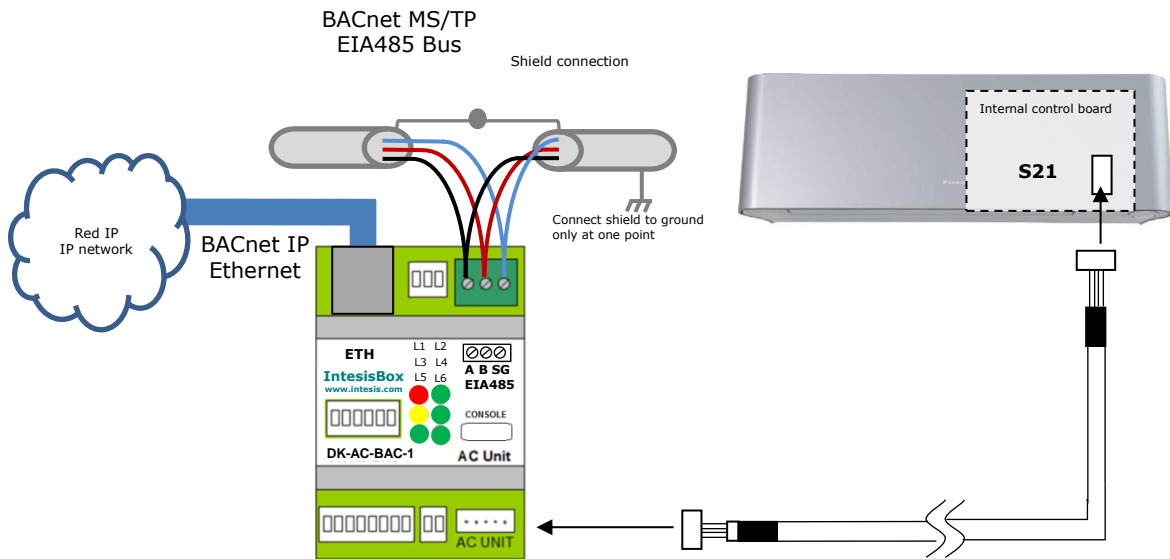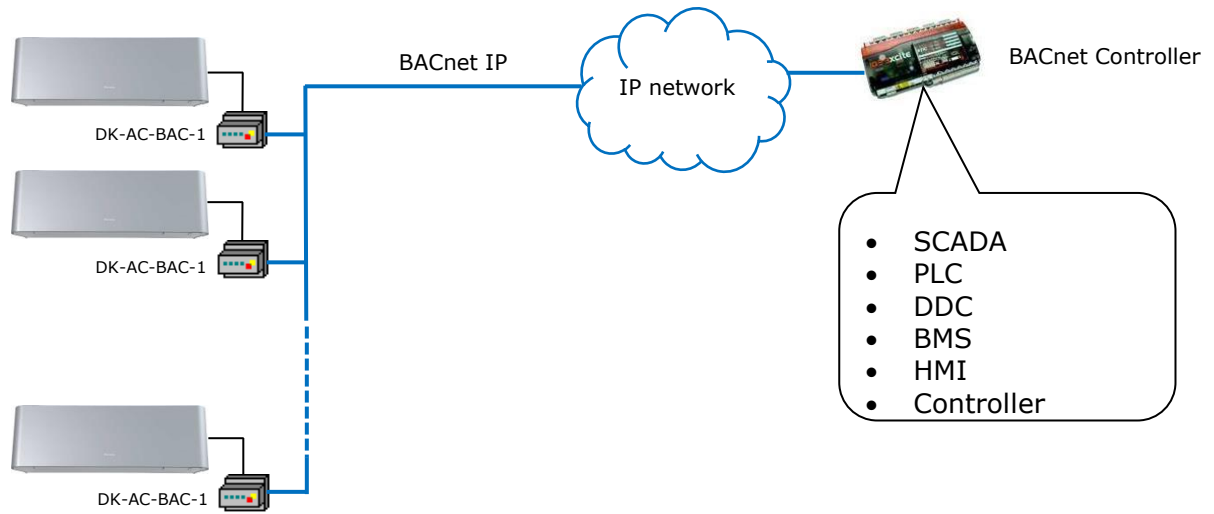

2.1 Connection example to BACnet MS/TP
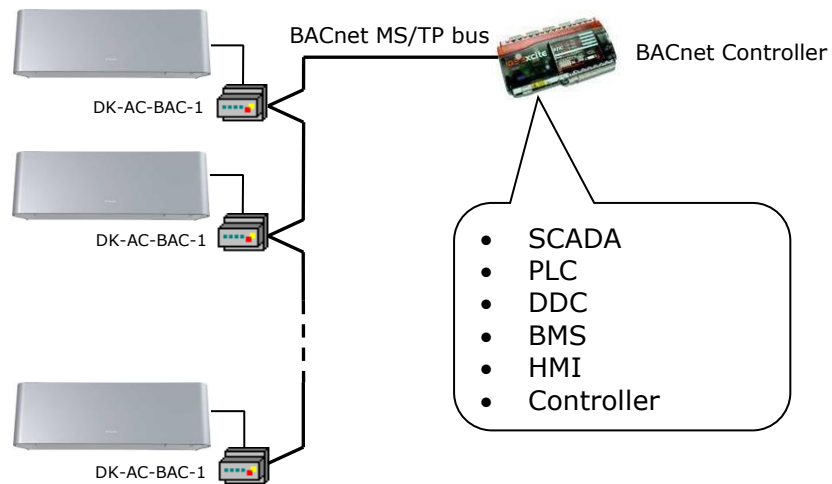
BACnet MS/TP installation sketch

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2.2   Connection example to BACnet IP

BACnet IP installation sketch

3. List of compatible Daikin AC indoor units.

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

http://intesis.com/pdf/IntesisBox_DK-AC-xxx-1_AC_Compatibility.pdf

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4. Technical Specifications

|	
Enclosure	Plastic, type PC (UL 94 V-0). Dimensions: 93mm x 53mm x 58mm. Weight: 85 g
Color	Light Grey. RAL 7035.
Terminal wiring (for power supply and low-voltage signals)	Per terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5 … 2.5mm^2 2 cores: 0.5 … 1.5mm^2 3 cores: not permitted
Console Port	Mini USB port for console usage
Mounting	Wall. DIN rail EN60715 TH35.
BACnet MS/TP port	1 x EIA485 Plug-in screw terminal block (2 poles + GND)
BACnet IP port	1 x Ethernet 10/100BT RJ45.
LED indicators	6 x Gateway/Communication status
Operational temperature	0°C to +70°C
Operational humidity	5% to 95%, non-condensing
Isolation Voltage	*4000 VDC (between AC unit and EIA-485)* *1000 VDC (between AC unit and console)*
Protection	IP20 (IEC60529).
RoHS conformity	Compliant with RoHS directive (2002/95/CE).
Certifications	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

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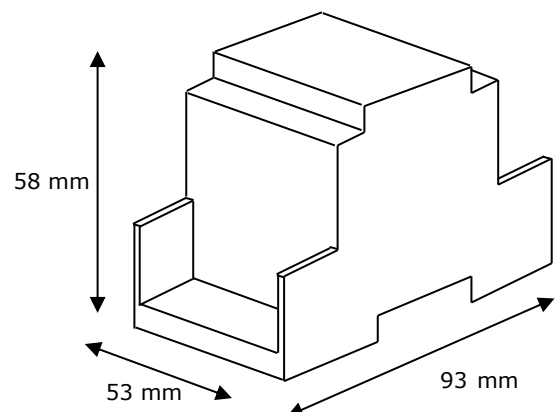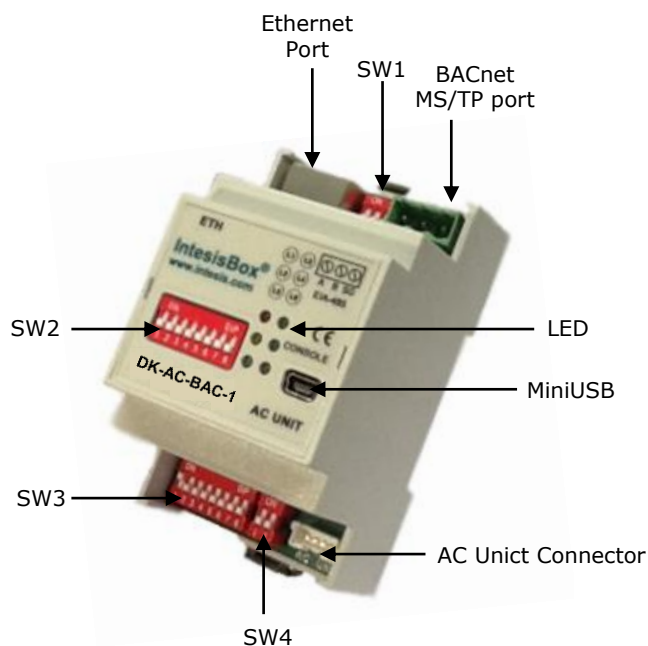
IntesisBox®
DK-AC-MBS-1

Modbus Interface for DAIKIN Air Conditioners
(Domestic line)
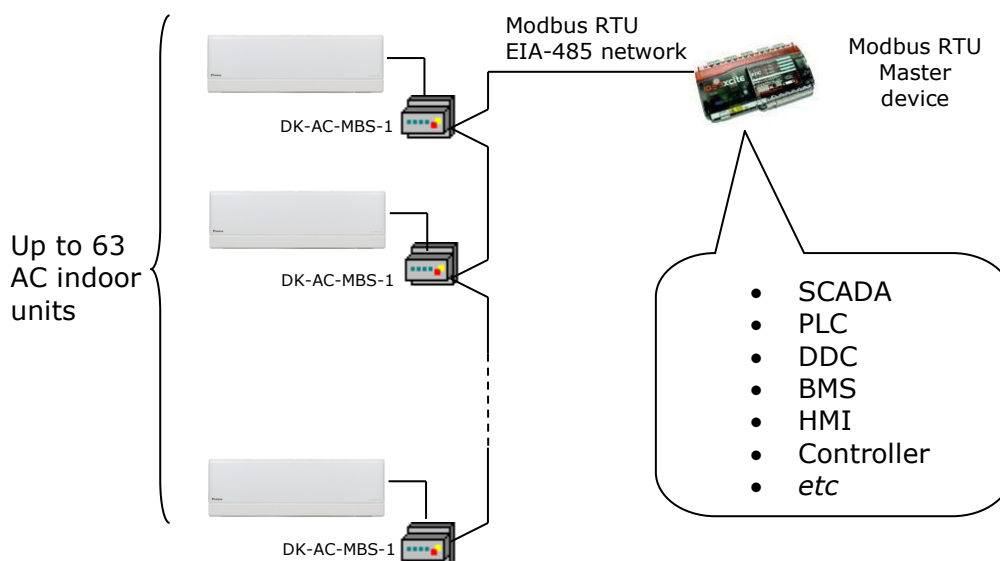
The DK-AC-MBS-1 interface allows a complete and natural integration of **Daikin** air conditioners into Modbus RTU (EIA-485) networks. Compatible with all models of air conditioning of the domestic line of **Daikin.**

- 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 DK-AC-MBS-1 devices can be connected in the same network. DK-AC-MBS-1 is a Modbus Slave device.

- Direct connection to the AC indoor unit. Up to 1 indoor unit can be connected to DK-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.

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1 Modbus Interface

1.1 Modbus Functions

DK-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

DK-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 Daikin AC indoor units.

A list of Daikin indoor unit model references compatible with DK-AC-MBS-1 and their available features can be found at:
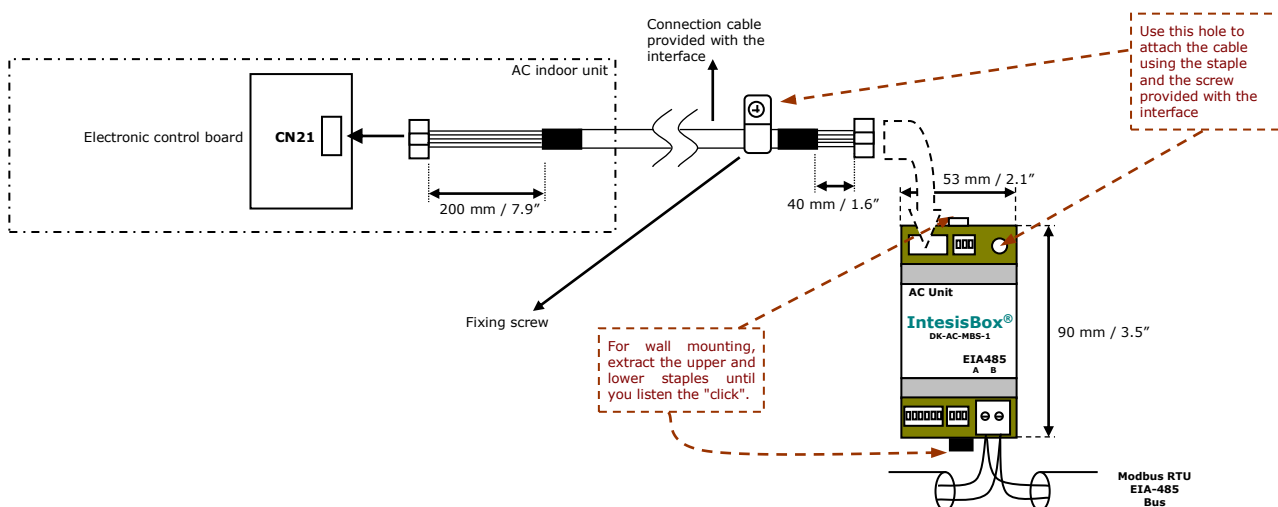
https://www.intesisbox.com/intesis/support/compatibilities/IntesisBox_DK-AC-xxx-1_AC_Compatibility.pdf

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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	0ºC to +60ºC
Weight	85 g.	Stock Temperature	-20ºC to +85ºC
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 Specific connector Specific cable included	Isolation resistance	1000 MΩ
Switch 1 (SW1)	1 x DIP-Switch	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

DK-AC-MBS-1 connects directly to the interior unit using the connector **CN21**. Use the *EIA485* connector in the DK-AC-MBS-1 to connect to the Modbus network.
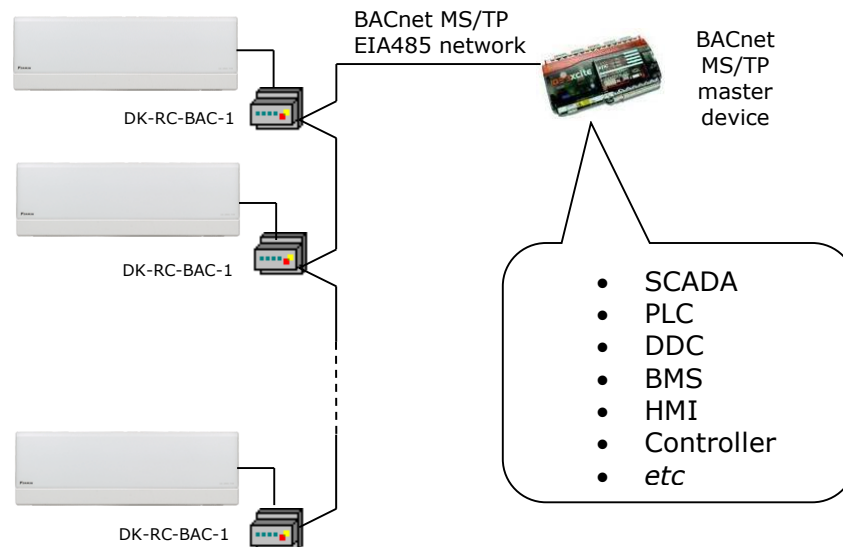
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DK-RC-BAC-1

BACnet MS/TP & IP Interface for DAIKIN Air Conditioners

The DK-RC-BAC-1 interface allows a complete and natural integration of **Daikin** air conditioners into either BACnet IP or MS/TP networks. Compatible with SKY & VRV air conditioner lines commercialized by Daikin.

- 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. DK-RC-BAC-1 is a BACnet MS/TP master device 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.

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BACnet Interface (Member Objets)

Object-name	Description	Object-type
DK-RC-BAC-1	Daikin RC Interface	Device
OnOff_status		BI
OnOff_command		BO
Mode_status		MI
Mode_command		MO
SetPoint_status		AI
SetPoint_command		AO
FanSpeed_status		MI
FanSpeed_command		MO
AirDirectionUD_status		MI
AirDirectionUD_command		MO
RoomTemperature_status		AI
RoomTemperature_command		AO
ErrorCode		AI
ErrorCodeM		MI
ErrorActive		BI
ErrorAddress		AO
OnTimeCounter		AV
FilterSign		BI
FilterReset		BO
Occupancy		MV
OccupiedCoolSetPoint		AV
OccupiedHeatSetPoint		AV
UnoccupiedCoolSetPoint		AV
UnoccupiedHeatSetPoint		AV
OccupancyContinuousCheck		BV
UnoccupiedDeadbandAction		BV
LockRemoteControl		BV
IndoorLiquidPipeTemp		AI
IndoorGasPipeTemp		AI
IndoorEEVOpening		AI
Thermostat ON		BI

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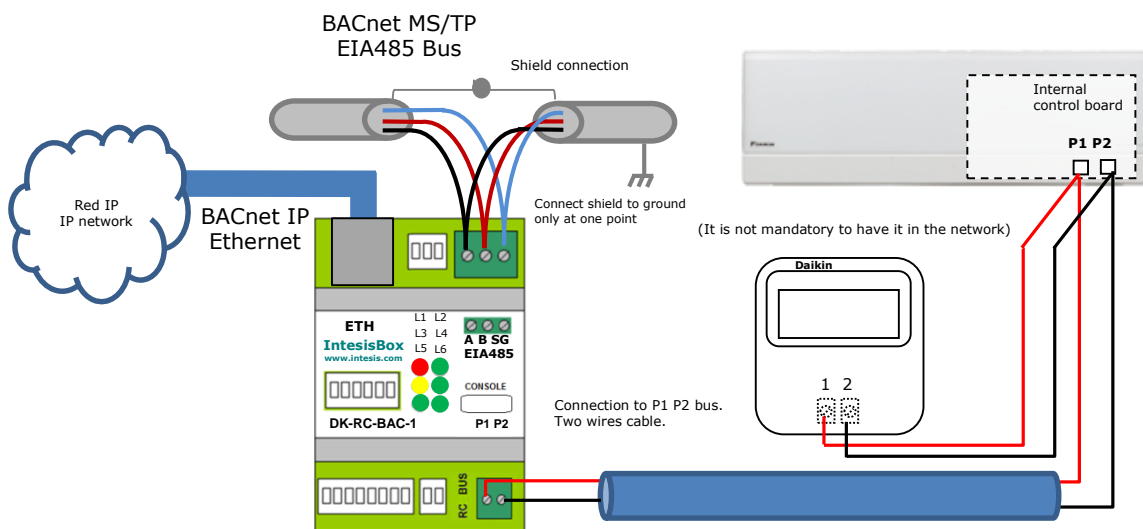|	
URL	http://www.intesis.com
email	info@intesis.com
tel	+34 938047134

1. List of compatible Daikin AC indoor units.

A list of Daikin indoor unit model references compatible with DK-RC-BAC-1 and their available features can be found at:

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

2. Connections

DK-RC-BAC-1 connects directly to the indoor unit connector using the **P1P2** connector and to the BACnet side using BACnet IP or BACnet MS/TP (See picture below).

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3. Technical Specifications

Enclosure	Plastic, type PC (UL 94 V-0). Dimensions: 93mm x 53mm x 58mm. Weight: 85 g
Color	Light Grey. RAL 7035.
Terminal wiring (for power supply and low-voltage signals)	Per terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5 … 2.5mm^2 2 cores: 0.5 … 1.5mm^2 3 cores: not permitted
Console Port	Mini USB port for console usage
Mounting	Wall. DIN rail EN60715 TH35.
BACnet MS/TP port	1 x EIA485 Plug-in screw terminal block (2 poles + GND)
LED indicators	6 x Gateway/Communication status
Operational temperature	0°C to +40°C
Operational humidity	5% to 95%, non-condensing
Isolation Voltage	*4000 VDC (between AC unit and EIA-485)* *1000 VDC (between AC unit and console)*
Protection	IP20 (IEC60529).
RoHS conformity	Compliant with RoHS directive (2002/95/CE).
Certifications	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.

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DK-RC-MBS-1

Modbus Interface for DAIKIN Air Conditioners
(Lines SKY & VRV)
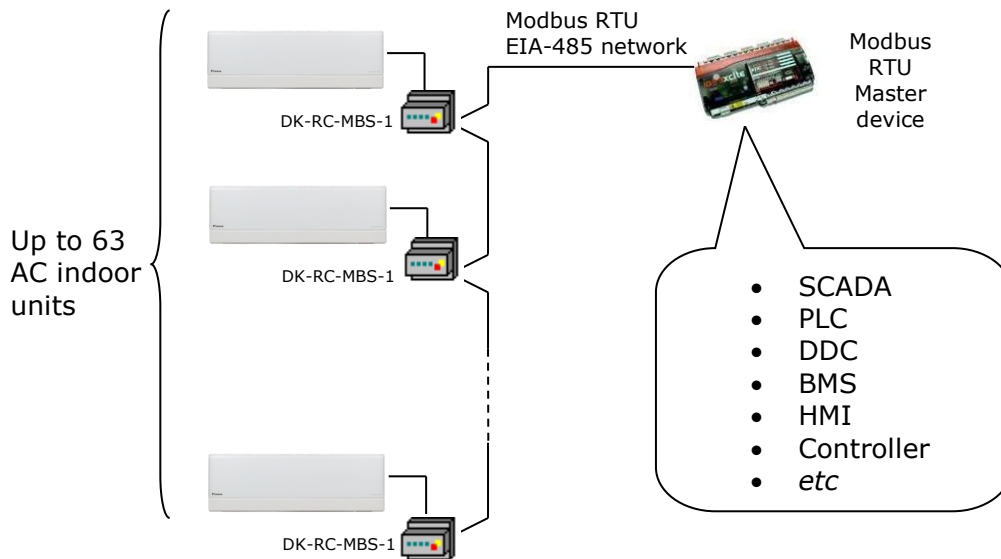
The DK-RC-MBS-1 interface allows a complete and natural integration of **Daikin** air conditioners into Modbus RTU (EIA-485) networks. Compatible with SKY and VRV models commercialized by **Daikin**

- 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 DK-RC-MBS-1 devices can be connected in the same network. DK-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 DK-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 using simultaneously remote controls and Modbus RTU.

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1.   *Modbus Interface*

1.1   *Modbus Functions*

DK-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 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*

DK-RC-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 value)

- 19200 bps

- 38400 bps

- 57600 bps

- 76800 bps

- 115200 bps

2.   *List of compatible Daikin indoor units.*

A list of Daikin indoor unit model references compatible with DK-RC-MBS-1 and their available features can be found at:

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

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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	0ºC to +60ºC
Weight	85 g.	Stock Temperature	-20ºC to +85ºC
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 P1P2 bus Plug-in screw terminal block (2 poles): P1, P2 Compatible with Daikin 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		

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4.　Connections

DK-RC-MBS-1 can be used with Daikin Remote Controllers or without them. Use the EIA-485 connector in the DK-RC-MBS-1 to connect to the Modbus network.

- DK-RC-MBS-1 with DAIKIN Remote Controller
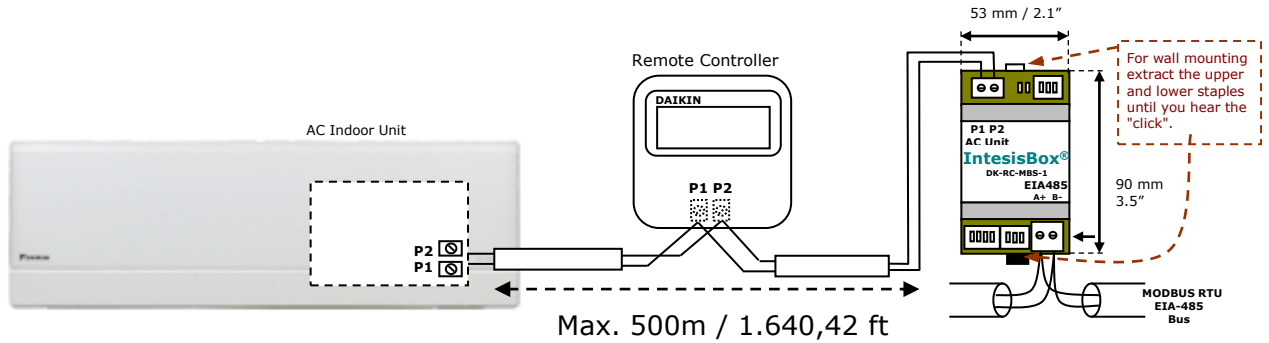
- DK-RC-MBS-1 without DAIKIN Remote Controller

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