Installation Guide for the IN485DAI001R000 Gateway

Version: 1.0.4

Owner's record

Find the serial number on the silver label on the right side of the gateway. For sales or technical assistance, we recommend writing it in the space below:

SN:

Safety Information

Follow these instructions carefully. Improper work may seriously harm your health and damage the gateway and/or any other equipment connected to it.

Only technical personnel, following these instructions and the country legislation for installing electric equipment, can install and manipulate this gateway.

Install this gateway indoors, in a restricted access location, avoiding exposure to direct solar radiation, water, high relative humidity, or dust.

All wires for communication and power supply (if needed) must only be connected to networks without routing to the outside plant. All communication ports are considered for indoor use and must only be connected to SELV circuits.

Mount the gateway, preferably, on a DIN rail inside a grounded metal cabinet following the instructions below.

In the case of wall mounting, firmly fix the gateway on a non-vibrating surface following the instructions below.

Disconnect power wires before manipulating and connecting them to the gateway.

Use SELV-rated NEC class 2 or limited power source (LPS) power supply.

Use a circuit-breaker before the power supply. Rating 250 V, 6 A.

Supply the correct voltage to power the gateway. See the Technical Specifications table at the end of this document.

Respect the expected polarity of power (if needed) and communication cables when connecting them to the gateway.

This gateway is designed for installation inside an enclosure. When working inside an enclosure (ex. to make adjustments, set switches, etc.), observe the common antistatic precautions before manipulating the gateway.

Safety instructions in other languages can be found here.

Disposal and Recycling

This product contains electronic components and must be properly disposed of according to local laws and regulations. For further information, refer to: https://www.hms-networks.com/sustainability

For further information on the installation, connection, and configuration of this gateway, refer to the User manual.

Mounting

Mount the gateway over a wall or over a DIN rail.

Do not mount the gateway in air-handling units or conducts.

DIN rail mounting inside a grounded metallic cabinet is recommended.

Wall mounting

1. Press the rear panel clips outwards until you hear a *click*.
2. Use the clip holes to screw the gateway to the wall.
3. Make sure the gateway is firmly fixed.

DIN rail mounting

Keep the clips in its original position.

1. Fit the gateway's top-side clip in the upper edge of the DIN rail.
2. Press the low side of the gateway gently to lock it in the DIN rail.
3. Make sure the gateway is firmly fixed.

For some DIN rails, to complete step 2, you may need a small screwdriver or similar to pull the bottom clip down.

Wiring

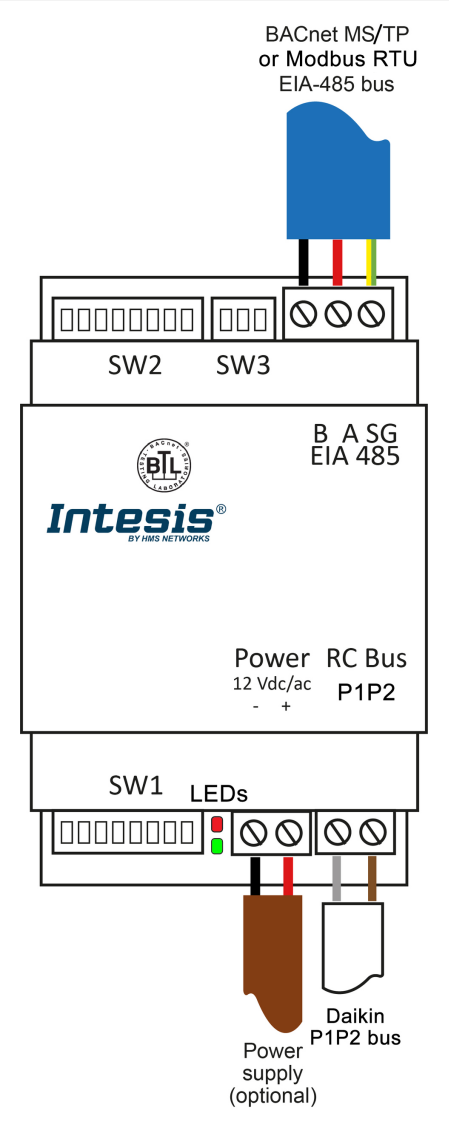

Figure 1. Wiring diagram *(wire colors are indicative only)*

Disconnect all systems from power before wiring the gateway.

1. Connect the P1P2 bus to the gateway's RC bus connector. This bus has no specific polarity.

   The maximum length for the RC bus cable is 500 m (1640 ft). To know more, consult the AC indoor unit technical documentation.

2. Connect the BACnet MS/TP or Modbus RTU bus to the EIA-485 port of the gateway.

   Observe polarity: B -, A +, and SG for ground connection.

3. Reconnect all systems to power.

Keep communication cables away from power and ground wires.

Connection to an external power supply: This gateway is powered by the AB bus itself, and there is no need to connect an external power supply. Nonetheless, the bus could not supply the needed power* depending on the number and type of remote controllers installed. If that's the case, connect a 12 VDC/VAC SELV-rated NEC class 2 or Limited Power Source (LPS) power supply in the gateway's Power connector.

*Some signs indicating there is not enough power in the bus may include, for example, a malfunction of the remote controllers' displays or performance.

DIP Switches

The gateway includes three DIP switches: SW1 (8 switches) at the bottom and SW2 (8 switches) and SW3 (3 switches) at the top.

Table 1. **SW1** (P1, P2, P5): Gateway configuration; (P6 to P8): BACnet MS/TP or Modbus RTU baudrate

Binary value	Position								Description	
b0 .. b7	1	2	3	4	5	6	7	8	BACnet	Modbus
0XXXXXXX	OFF	X	X	X	X	X	X	X	Follower in RC bus (default)	Follower in RC bus (default)
1XXXXXXX	ON	X	X	X	X	X	X	X	Header in RC bus	Header in RC bus
X0XXXXXX	X	OFF	X	X	X	X	X	X	Temperature reading from the IU (default)	
X1XXXXXX	X	ON	X	X	X	X	X	X	Temperature reading from the wired RC	
XXXX0XXX	X	X	X	X	OFF	X	X	X	BACnet MS/TP in 485 port enabled (default)	Modbus RTU in 485 port disabled (default)
XXXX1XXX	X	X	X	X	ON	X	X	X	BACnet MS/TP in 485 port disabled	Modbus RTU in 485 port enabled
XXXXX000	X	X	X	X	X	OFF	OFF	OFF	Autobaudrate (default)	2400 bps
XXXXX100	X	X	X	X	X	ON	OFF	OFF	9600 bps	4800 bps
XXXXX010	X	X	X	X	X	OFF	ON	OFF	19200 bps	9600 bps
XXXXX110	X	X	X	X	X	ON	ON	OFF	38400 bps	19200 bps
XXXXX001	X	X	X	X	X	OFF	OFF	ON	57600 bps	38400 bps
XXXXX101	X	X	X	X	X	ON	OFF	ON	76800 bps	57600 bps
XXXXX011	X	X	X	X	X	OFF	ON	ON	115200 bps	76800 bps
XXXXX111	X	X	X	X	X	ON	ON	ON	Autobaudrate	115200 bps

Table 2. **SW2 (BACnet MS/TP)** (P1 to P7): BACnet MS/TP MAC address; (P8): Temperature unit (°C/°F)

Binary value	Position								BACnet address	Description
b0 .. b7	1	2	3	4	5	6	7	8		
0000000X	OFF	OFF	OFF	OFF	OFF	OFF	OFF	X	0	-
1000000X	ON	OFF	OFF	OFF	OFF	OFF	OFF	X	1	-
0100000X	OFF	ON	OFF	OFF	OFF	OFF	OFF	X	2	-
1100000X	ON	ON	OFF	OFF	OFF	OFF	OFF	X	3	-
...	...								...	-
1011111X	ON	OFF	ON	ON	ON	ON	ON	X	125	-
0111111X	OFF	ON	ON	ON	ON	ON	ON	X	126	-
1111111X	ON	ON	ON	ON	ON	ON	ON	X	127	-
XXXXXXX0	X	X	X	X	X	X	X	OFF	-	Temperature in Celsius (default)
XXXXXXX1	X	X	X	X	X	X	X	ON	-	Temperature in Fahrenheit

Table 3. **SW2 (Modbus RTU)** (P1 to P6): Modbus server address; (P7): Degree decimals setting; (P8): Temperature unit (°C/°F)

Binary value	Position								Modbus address	Description
b0 .. b7	1	2	3	4	5	6	7	8		
100000XX	ON	OFF	OFF	OFF	OFF	OFF	X	X	1	-
010000XX	OFF	ON	OFF	OFF	OFF	OFF	X	X	2	-
110000XX	ON	ON	OFF	OFF	OFF	OFF	X	X	3	-
...	...								...	-
101111XX	ON	OFF	ON	ON	ON	ON	X	X	61	-
011111XX	OFF	ON	ON	ON	ON	ON	X	X	62	-
111111XX	ON	ON	ON	ON	ON	ON	X	X	63	-
XXXXXX0X	X	X	X	X	X	X	OFF	X	-	Temperature in degrees x1 (default)
XXXXXX1X	X	X	X	X	X	X	ON	X	-	Temperature in degrees x10. Example: 19.2°=192
XXXXXXX0	X	X	X	X	X	X	X	OFF	-	Temperature in Celsius (default)
XXXXXXX1	X	X	X	X	X	X	X	ON	-	Temperature in Fahrenheit

Table 4. **SW3** (P1 to P3): BACnet/Modbus polarization and termination resistor

Binary value	Position			Description
b0 .. b2	1	2	3	
0XX	OFF	X	X	EIA-485 bus without termination resistor. The gateway is not at one end of the EIA-485 bus (default value)
1XX	ON	X	X	120 Ω termination resistor active. The gateway is at one end of the EIA-485 bus
X00	X	OFF	OFF	No bus polarization (default value)
X11	X	ON	ON	Bus polarization active

Observe the **ON** indicator on each DIP switch as a reference.

The DIP switches configuration will only take effect after rebooting the gateway.

LEDs Information

Two LEDs are placed between SW1 and the Power connector at the gateway's bottom.

LED	Status	Description
When the gateway is set for BACnet MS/TP		
L1 Green	ON	EIA-485 bus link performed
	Flickering	Activity on the EIA/485 bus
	OFF	EIA-485 bus link not performed
L2 Red	ON	AC communication error
	Blinking	AC unit error
	Flashing	AC communication OK
When the gateway is set for Modbus RTU		
L1 Green	Blinking	Communication error Any error in the AC unit
	Flashing	Normal operation
L1 Green + L2 Red	Pulse	Gateway startup
LED PATTERNS: **Flickering:** 90 % on / 10 % off **Blinking:** 50 % on / 50 % off **Flashing:** 10 % on / 90 % off **Pulse:** 5 sec on / then off		

Technical Specifications

Housing	Plastic, type PC (UL 94 V-0) Net dimensions (HxWxD): 93 x 53 x 58 mm / 3.7 x 2.1 x 2.3” Color: Light grey. RAL 7035
Weight	85 g (3 oz)
Terminal wiring	Wire cross-section/gauge per terminal: One core: 0.2 .. 2.5 mm^2 (24 .. 11 AWG) Two cores: 0.2 .. 1.5mm^2 (24 .. 15 AWG) Three cores: Not permitted Use solid or stranded wires (twisted or with ferrule).
External power supply (optional)	SELV-rated NEC class 2 or limited power source (LPS) power supply 12 VDC/AC; 0.1 A
Mounting	Wall, DIN rail, or inside the indoor unit
EIA-485 port **BACnet MS/TP - Modbus RTU**	1 x pluggable terminal block (3 poles: B, A, and SG)
AC unit port	1 x RC bus pluggable terminal block (2 poles)
LED indicators	2 x Communication status
DIP switches	SW1: Gateway and baudrate configuration SW2: BACnet/Modbus address and temperature unit SW3: Bus polarization and termination
Operational and storage temperature	Celsius: Op: 0 to +70°C; St: -20 to 85°C Fahrenheit: Op: 32 to 158°F; St: -4 to 185°F
Operational and storage humidity	5% to 95% RH non-condensing
Isolation Voltage	1500 VDC
Isolation resistance	1000 MΩ