Jakin ID

ACTA208 IoT Controller – Demo Panel Installation Manual (Version 1.4, May 2026)

Table of Contents

1. Safety Information

⚠ WARNING

ELECTRICAL HAZARD: This device must be installed by a qualified electrician in accordance with local electrical codes and regulations.

Before Installation:

- Disconnect all power sources before installation
- Verify that circuit breakers are in OFF position
- Use appropriate personal protective equipment (PPE)
- Ensure proper grounding of all equipment

Safety Precautions:

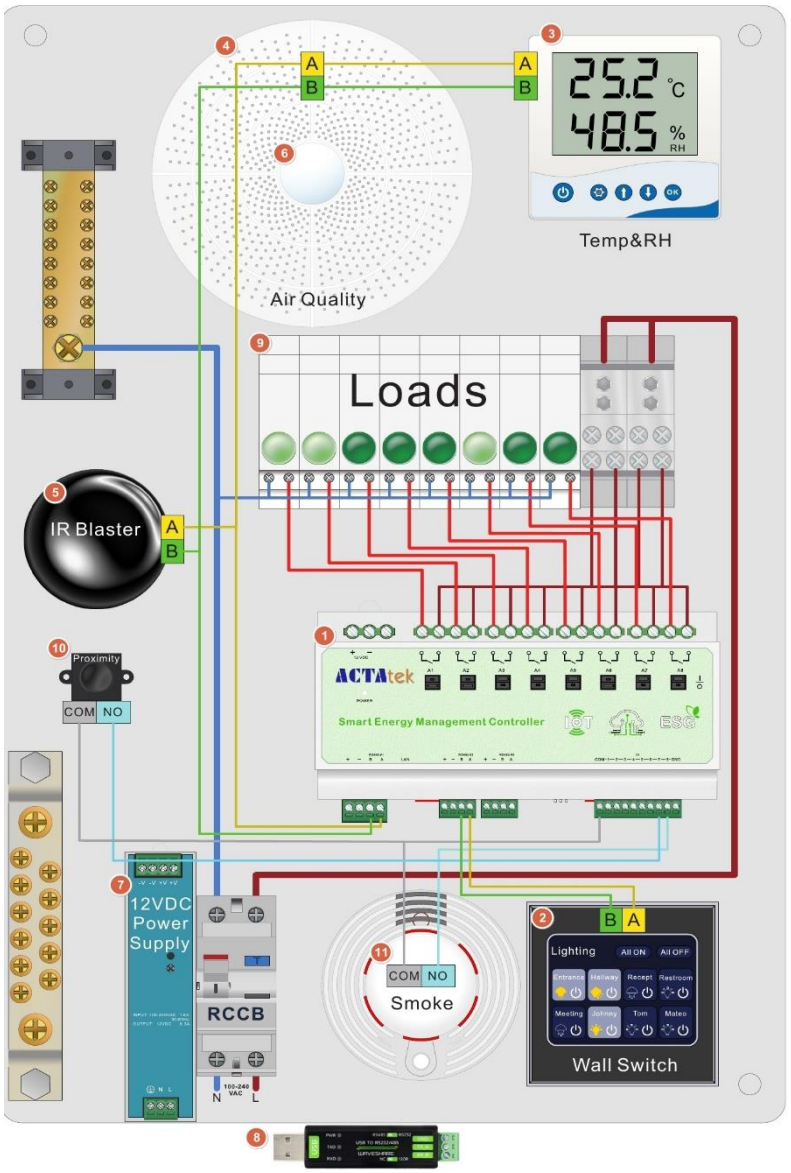
- Do not expose the controller to water or excessive moisture
- Operating temperature: 0°C to 50°C (32°F to 122°F)
- Relative humidity: 10% to 90% non-condensing
- Keep away from heat sources and direct sunlight
- Maximum relay load: 277VAC, 50A per channel

2. Package Contents

Verify that your package contains the following items:

1. **1x** ACTA208 IoT Controller (main unit)
2. **1x** Touchscreen Wall Switch
3. **1x** Temperature & Humidity Display Sensor
4. **1x** AQI Sensor (Air Quality Index)
5. **1x** IR Transmitter (IR Blaster)
6. **1x** Lux Sensor
7. **1x** Mean Well XDR-75E-12 Power Supply (12VDC)
8. **1x** USB-RS485 Adapter
9. **8x** Circuit Indicators – show the status of each circuit. In real installations, they are not required; included only for demonstration purposes only.Not Relays
10. **1x** Infrared Proximity Sensor-Detects human presence/motion; triggers lighting or automation events
11. **1x** Smoke Sensor -Monitors smoke/fire hazards; sends alarm signal to controller

ACTAtek IoT Demoboard Connection Diagram



3. System Requirements

Hardware Requirements:

- Network switch or router with available Ethernet port
- Computer for initial configuration with AMS
- USB port for IR Blaster configuration

Network Requirements:

- Static network
- IP address range availability (192.168.1.X)
- Default gateway access
- Optional: MQTT server/broker for cloud connectivity

Software Requirements:

- AMS (Access Manager Suite) software
- Web browser (Chrome, Firefox, or Edge recommended)

4. Network Configuration

4.1 Physical Network Connection

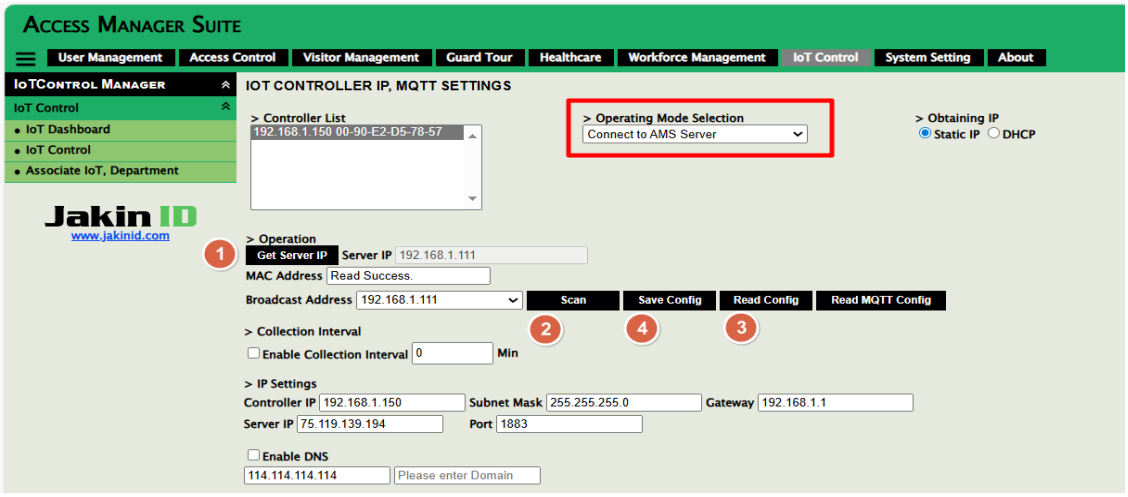
1. **Connect LAN Cable:**
    - Insert RJ45 Ethernet cable into the IoT Controller LAN port
    - Connect other end to network switch or router
    - Verify link LED is illuminated (green or amber)
2. **Initial Network Settings:**
    - Default IP Address: 192.168.1.150
    - Default Gateway: 192.168.1.1
    - Subnet Mask: 255.255.255.0 (typically)
    - Port: 8080

4.2 Accessing the IoT Controller

1. **Verify Network Connectivity:**
    - From a computer on the same network, ping 192.168.1.150
    - Ensure successful response
2. **Using AMS Software for Configuration:**

Open web browser and navigate to:
http://localhost/AccessManager/IoTControl/frmIoTConnect.aspx

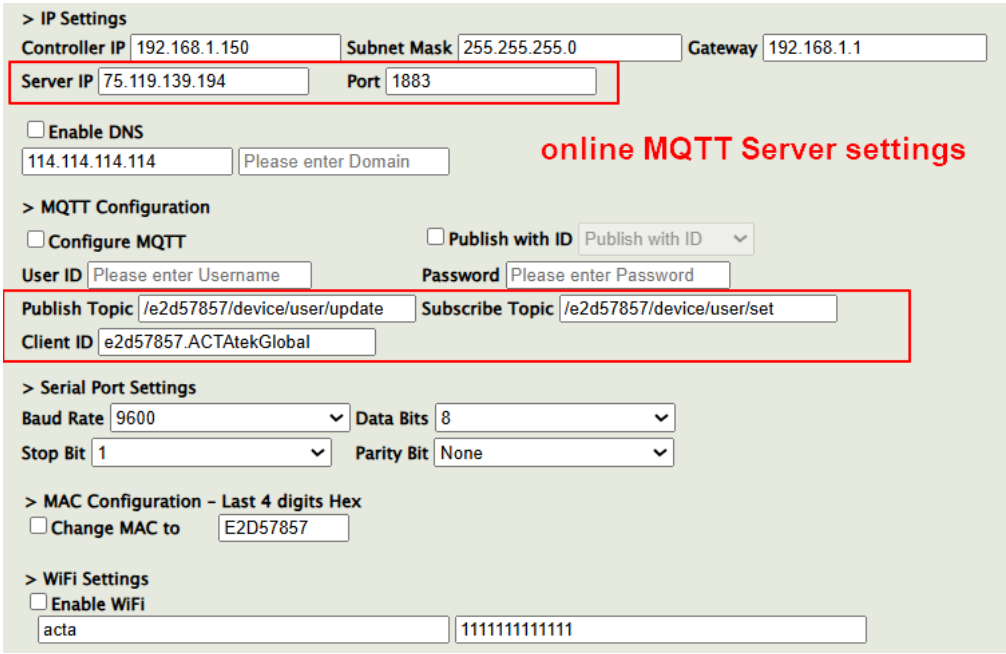
- Click [**Get Server IP**] to auto-fill AMS IP address
- Click [**Scan**] to discover IoT controllers (Controller List) on the local network
- **Select** the ACTA208 controller <IP address: **Mac Address**> from the device list



3. **Reading and Modifying Network Settings:**
   - Select the controller and click [**Read Config**]
   - Modify IP address, gateway, and port as needed for your network
   - Operating Mode Selection,select the [**Connect to AMS Server**]
   - Configure on-line MQTT server settings.See below figure as an example.

   Ensure that you change the MAC address of your IoT controller.

   - Publish Topic:/**XXXXXXXX**/device/user/update
   - Subscribe Topic:/ **XXXXXXXX** /device/user/set
   - Client ID: **XXXXXXXX**.ACTAtekGlobal

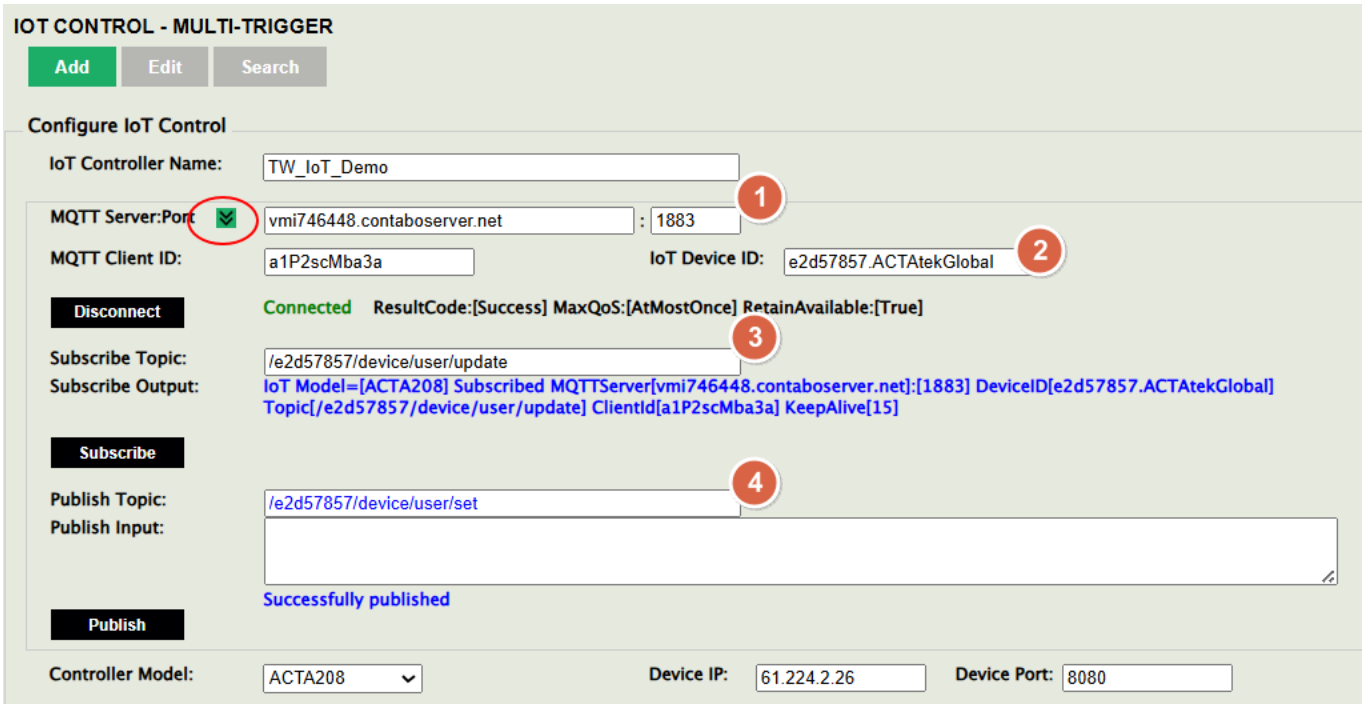


   - Click [Save Config] to apply changes
   - Note: Controller will reboot after configuration changes

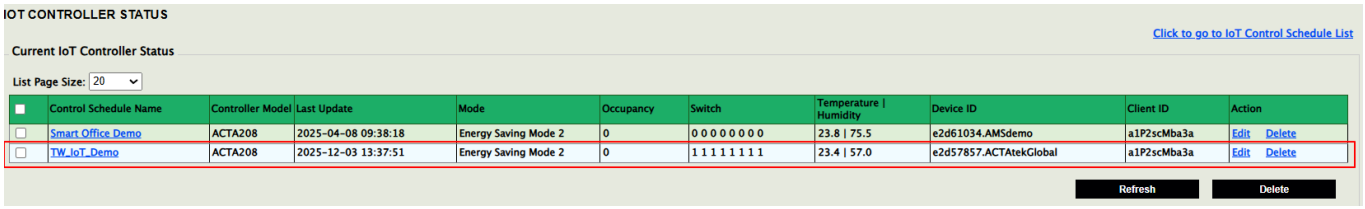
4.3 MQTT Configuration

Clients can use our online MQTT server for cloud connectivity and remote monitoring during demonstrations and evaluation if needed.

1. **Configure MQTT Settings:**
    - Navigate to: http://localhost/AccessManager/IoTControl/frmIoTController6.aspx
    - Enter **MQTT Server IP or Domain Name and Port**
    - Set **MQTT Client ID**: a1P2scMba3a
    - Set **IoT Device ID**:<**MAC Address**>.ACTAtekGlobal,then click [Connect] to test the connection.
    - Configure Subscribe Topic: /[**MAC**]/device/user/update,then Click [Subscribe] to test the connection.
    - Configure Publish Topic: /[**MAC**]/device/user/set,then click [Publish] to test the connection.
    - Scroll down ,and click [**Add IoT Controller**].



2. **Verify connection status**
    - Click [Click to go to IoT Controller Status]
    - Verify connection status in MQTT status page



5. Sensor Installation and Connection Examples

5.1 RS485 Sensor Wiring

All sensors communicate via RS485 protocol using A, B, and GND wires.

Standard RS485 Wiring:

- **A (Data+):** Yellow or Red wire
- **B (Data-):** Green or Black wire
- **GND:** Common ground reference

Wiring Topology:

- Use daisy-chain configuration
- Maximum cable length: 1200 meters total
- Use twisted pair cable (Cat5e or better recommended)
- Terminate the last device with 120Ω termination resistor if needed

5.2 Connecting Individual Sensors

Temperature & Humidity Sensor:

1. Connect RS485 A terminal to controller RS485 A
2. Connect RS485 B terminal to controller RS485 B
3. Connect GND to controller GND
4. Data Address: C11 (Temperature), C12 (Humidity)

AQI Sensor:

1. Connect via RS485 terminals (A, B, GND)
2. Provide 12VDC power from controller
3. Data Addresses:
    - C13: Formaldehyde (HCHO)
    - C14: PM2.5
    - C15: TVOC
    - C16: PM10
    - C17: CO_2

Lux Sensor:

1. Connect via RS485 (A, B, GND)
2. Data Address: C20

5.3 Digital Input (DI) Sensors

- B01: Infrared Proximity Sensor
- B02: Smoke Sensor

Connect dry contact switches between DI terminal and GND.

5.4 Touchscreen Wall Switch

1. **Connection:**
    - Connect via RS485 (A, B, GND)
    - Power: 12VDC from controller
2. **Addressing:**
    - Ensure unique device address (typically auto-assigned)
    - Test communication by pressing buttons

6. IR Blaster Setup

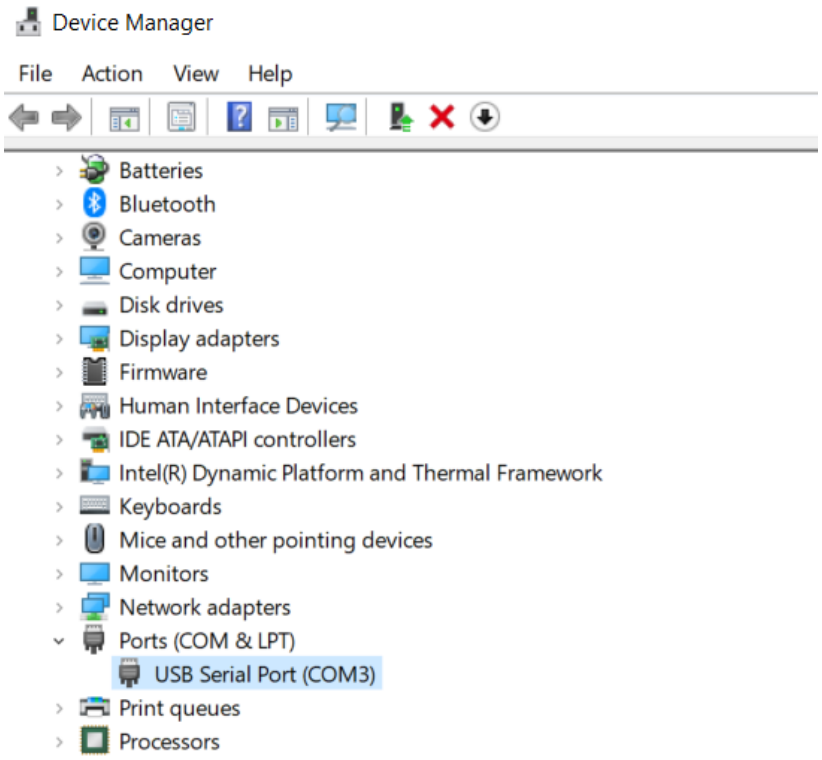
6.1 Hardware Connection for Configuration

Initial Setup (Using USB-RS485 Adapter):

1. **Disconnect from IoT Controller:**
    - Remove RS485 A and B wires from IoT controller terminals

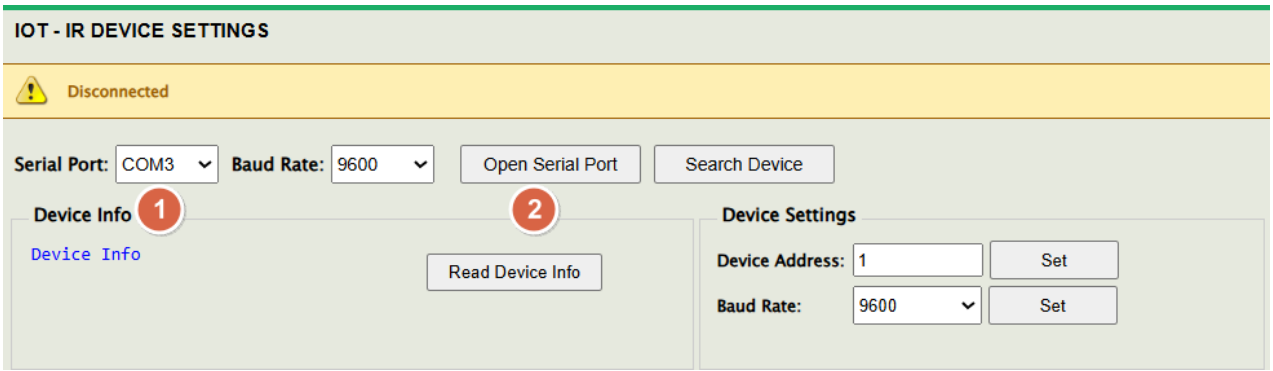
2. **Connect to Computer:**
    - Connect IR Blaster RS485 A and B to USB-RS485 adapter
    - Connect +12VDC power to IR Blaster
    - Insert USB-RS485 adapter into computer USB port

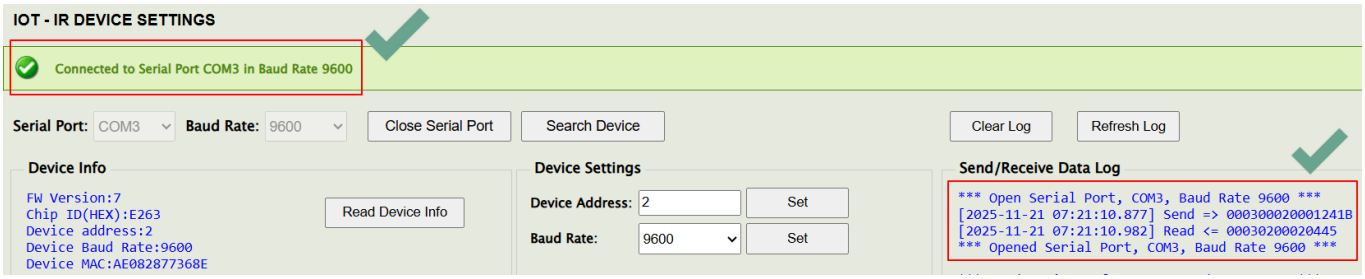
3. **Identify COM Port:**
    - Open Device Manager (Windows)
    - Expand "Ports (COM & LPT)"
    - Note the COM port number (e.g., **COM3**)



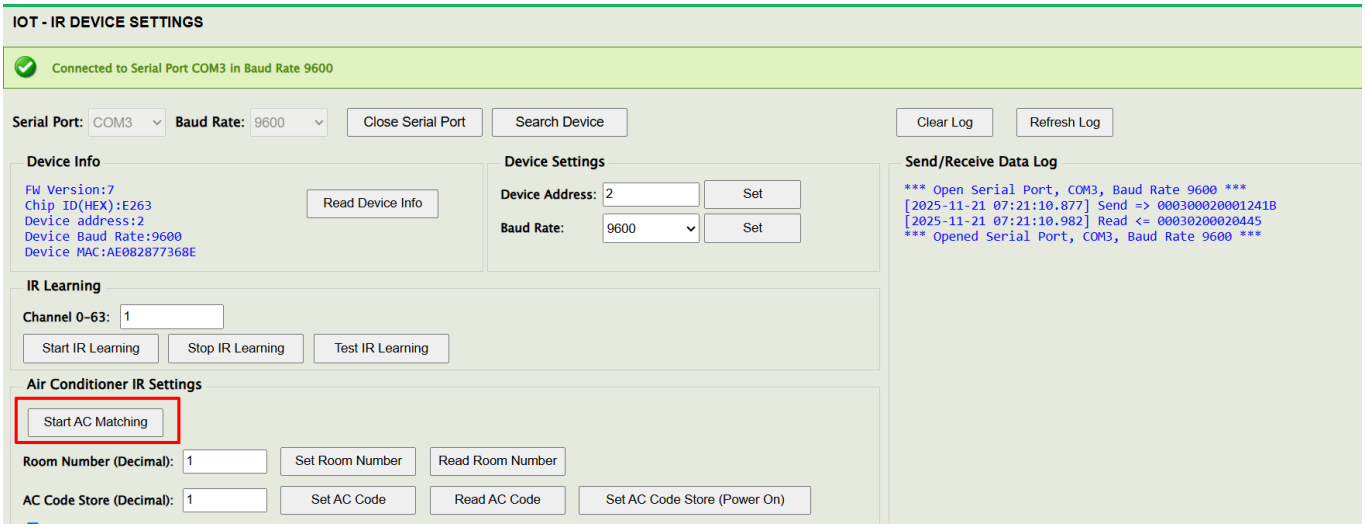
6.2 IR Code Matching

1. **Open AMS IR Configuration:**
    - Navigate to: http://localhost/AccessManager/IoTControl/frmIoT_IRConfig.aspx
    - Select identified COM port from dropdown. (e.g., **COM3**)
    - Click [Open Serial Port]





2. **AC Matching Process:**
    - Click [**Start AC Matching**]
    - Blue LED on IR Blaster will blink rapidly for 10 seconds
    - Point your AC remote at the IR Blaster
    - Press ON/OFF button on the AC remote
    - IR Blaster will capture and store the IR code



IOT - IR DEVICE SETTINGS

Connected to Serial Port COM3 in Baud Rate 9600

Serial Port: COM3 Baud Rate: 9600 | Close Serial Port | Search Device | Clear Log | Refresh Log

Device Info

FW Version:7
Chip ID(HEX):E263
Device address:2
Device Baud Rate:9600
Device MAC:AE082877368E

Read Device Info

Device Settings

Device Address: 2 Set
Baud Rate: 9600 Set

IR Learning

Channel 0-63: 1
Start IR Learning | Stop IR Learning | Test IR Learning

Air Conditioner IR Settings

Start AC Matching

Room Number (Decimal): 1 Set Room Number | Read Room Number
AC Code Store (Decimal): 1 Set AC Code | Read AC Code | Set AC Code Store (Power On)

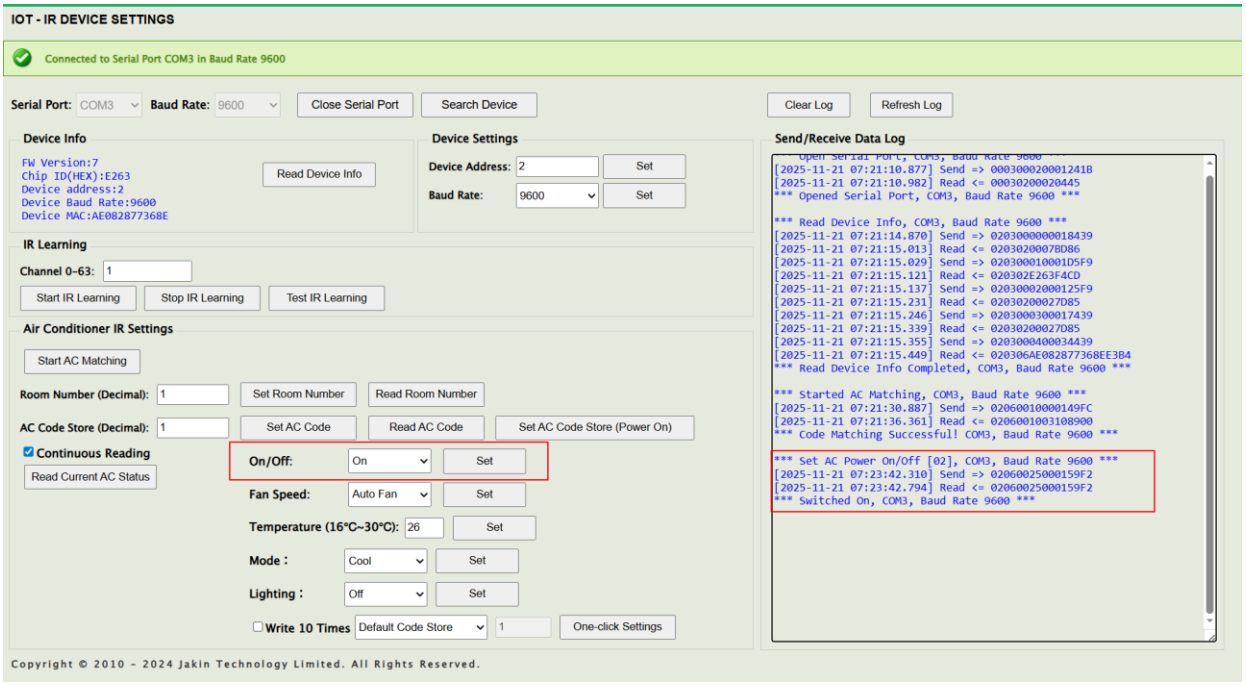
Continuous Reading
Read Current AC Status

On/Off: Off Set
Fan Speed: Auto Fan Set
Temperature (16℃~30℃): 16 Set
Mode : Auto Set
Lighting : Off Set
Write 10 Times Default Code Store 1 One-click Settings

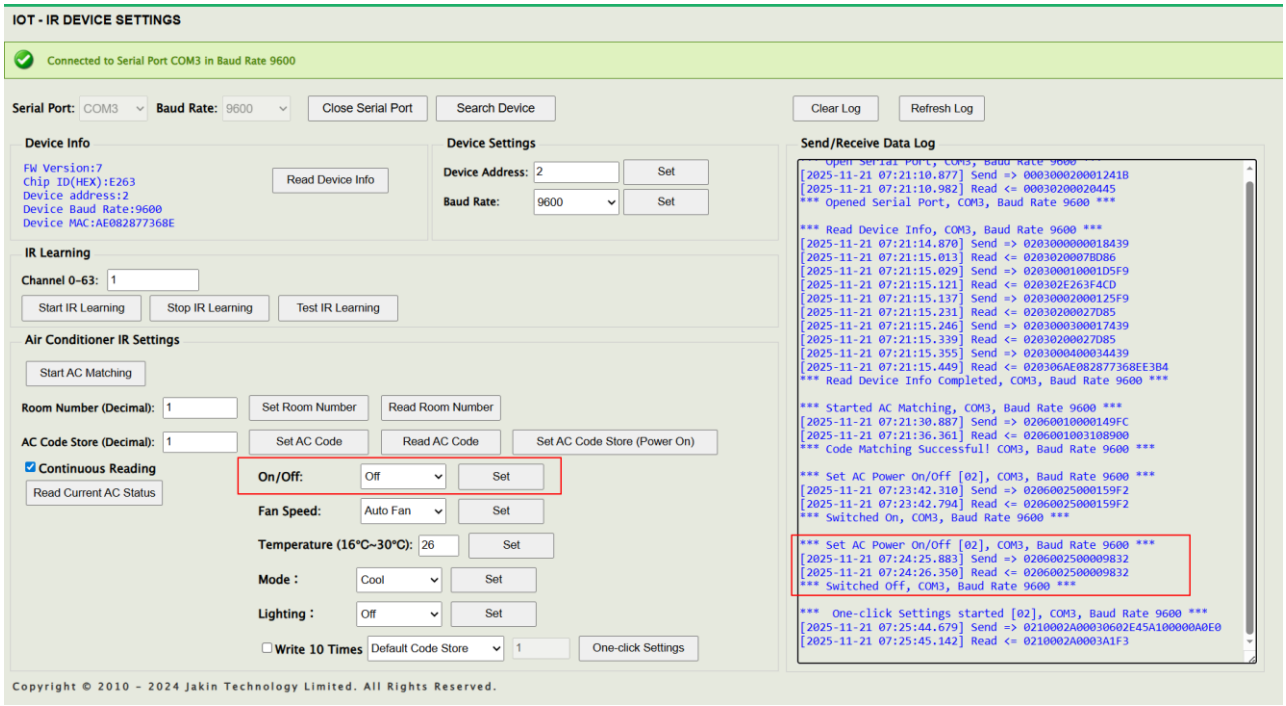
Send/Receive Data Log

```
*** Open Serial Port, COM3, Baud Rate 9600 ***
[2025-11-21 07:21:10.877] Send => 000300020001241B
[2025-11-21 07:21:10.982] Read <= 00030200020445
*** Opened Serial Port, COM3, Baud Rate 9600 ***

*** Read Device Info, COM3, Baud Rate 9600 ***
[2025-11-21 07:21:14.870] Send => 0203000000018439
[2025-11-21 07:21:15.013] Read <= 0203020007BD86
[2025-11-21 07:21:15.029] Send => 020300010001D5F9
[2025-11-21 07:21:15.121] Read <= 020302E263F4CD
[2025-11-21 07:21:15.137] Send => 020300020001 25F9
[2025-11-21 07:21:15.231] Read <= 0203020027D85
[2025-11-21 07:21:15.246] Send => 0203000300017439
[2025-11-21 07:21:15.339] Read <= 0203020027D85
[2025-11-21 07:21:15.355] Send => 0203000400034439
[2025-11-21 07:21:15.449] Read <= 020306AE082877368EE3B4
*** Read Device Info Completed, COM3, Baud Rate 9600 ***

*** Started AC Matching, COM3, Baud Rate 9600 ***
[2025-11-21 07:21:30.887] Send => 02060010000149FC
[2025-11-21 07:21:36.361] Read <= 0206001003108900
*** Code Matching Successful! COM3, Baud Rate 9600 ***
```

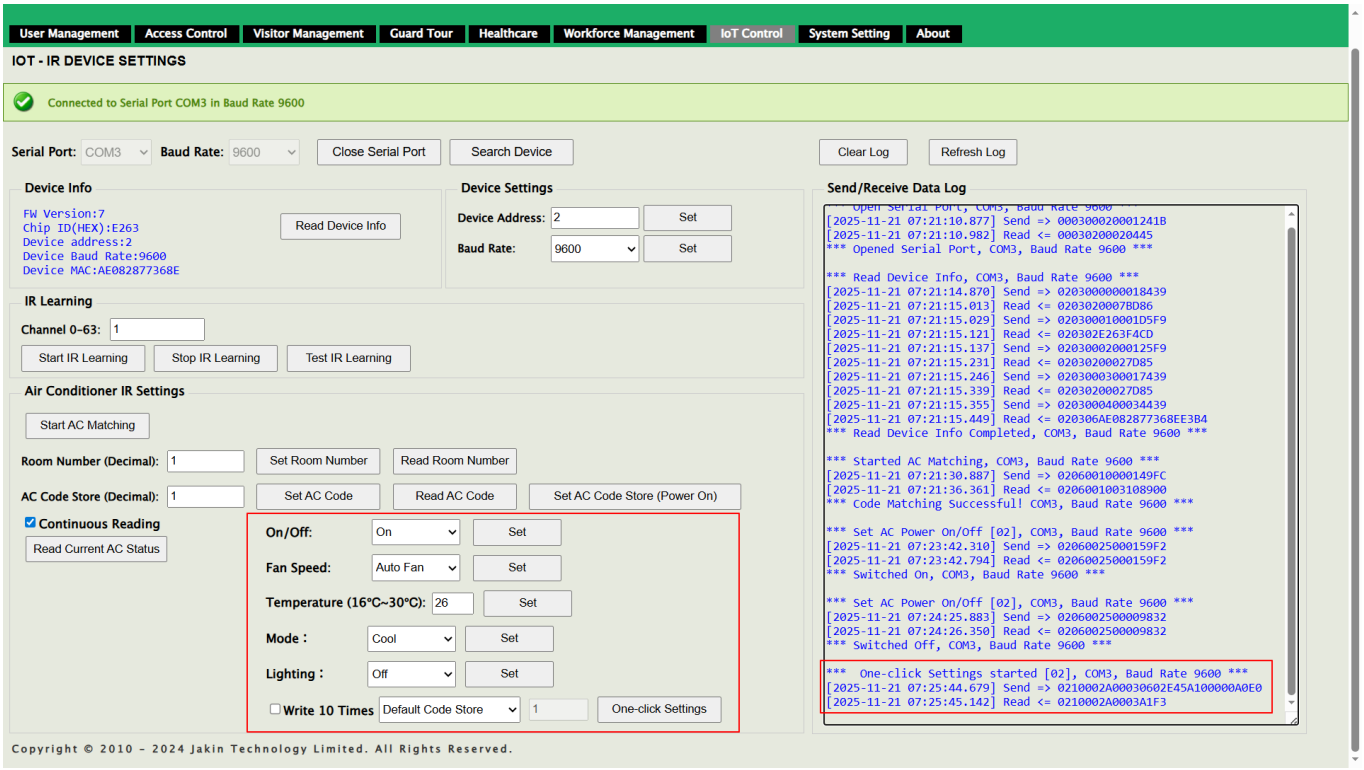
3. **Test IR Commands:**
   - **Turn On:** Select "On" from dropdown, click [Set]. The IR Blaster sends a command (e.g. 02060025000159F2) to turn the AC on.



   - **Turn Off:** Select "Off" from dropdown, click [Set].The IR Blaster sends a command (e.g. 0206002500009832) to turn the AC off.

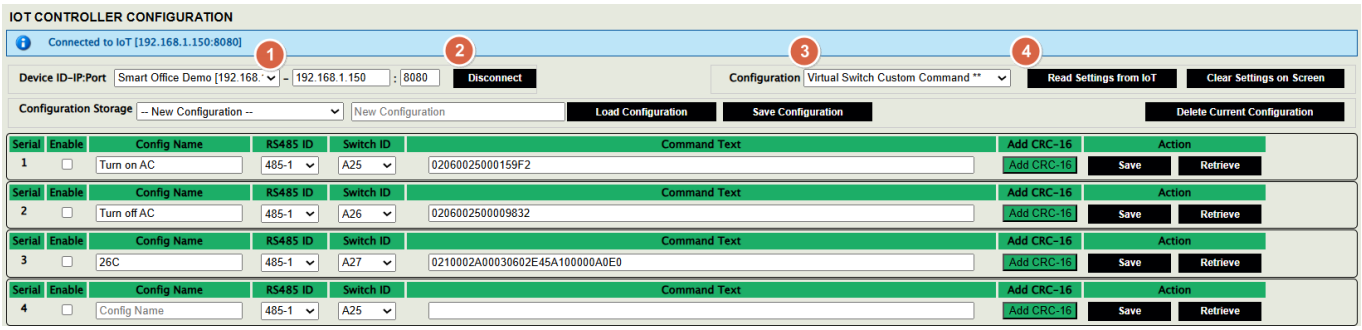


- **One-Click Settings:** Configure mode, temperature, fan speed, then click [One-Click Settings]. Click One-Click Settings, the IR Blaster transmits a single comprehensive command. (e.g. 0210002A00030602E45A100000A0E0)



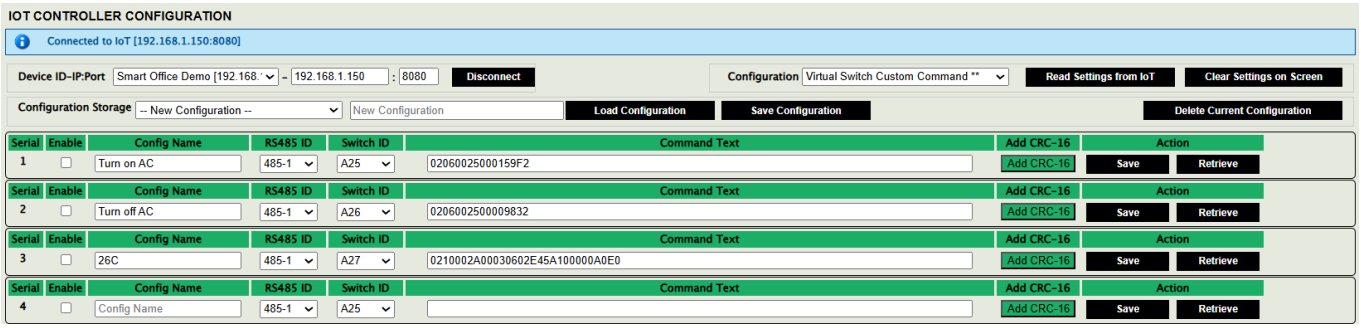
6.3 Assign IR Commands to Virtual Relays

1. **Copy IR Commands:**
   - Note the hexadecimal command codes (e.g., 02060025000159F2)
2. **Configure Virtual Switches:**
   - Navigate to: http://localhost/AccessManager/IoTControl/frmIoTActionConfig.aspx
   - Select **Deivce-IP:Port** from the device list dropdown.
   - Click [**Connect**]
   - Select "**Virtual Switch Custom Command** " from Configuration dropdown
   - Click [**Read Settings from IoT**].
3. **Create/Edit Virtual Relays:**
   - **A25:** Name: "Turn On AC" - Paste ON command (e.g. 02060025000159F2)
   - **A26:** Name: "Turn Off AC" - Paste OFF command (e.g. 0206002500009832)
   - **A27:** Name: "AC Cool 26°C" - Paste cool mode command (e.g. 0210002A00030602E45A100000A0E0)
   - Enable each virtual relay
   - Click [Save]



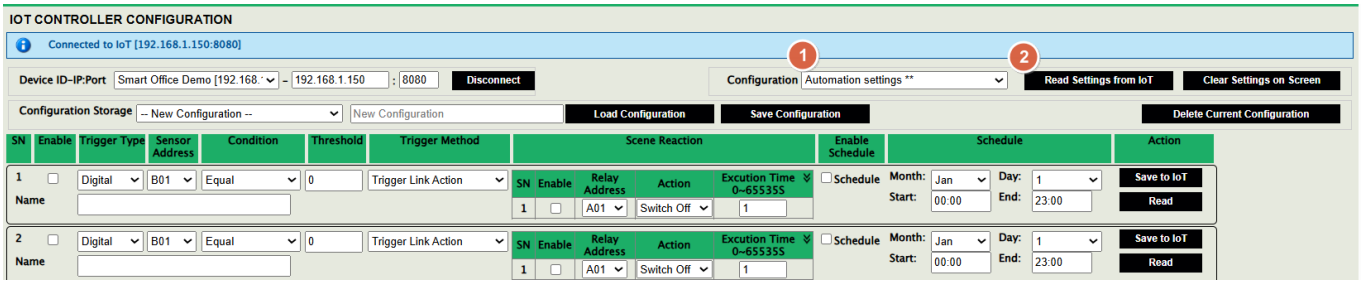
4. **Reconnect to IoT Controller:**
    - Disconnect IR Blaster from USB-RS485 adapter
    - Reconnect RS485 A and B wires to IoT controller terminals
    - Verify operation
    -
5. **Example Setup**

- A25: Turn On AC
- A26: Turn Off AC
- A27: Turn On AC, Cool mode, adjust Temperature to 26°C



6. **Setup Automation**

- Reconnect the RS485 wires of IR Blaster to IoT Controller.
- Select [**Automation settings**] from the Configuration dropdown.
- Click [**Read Settings from IoT**].



Automation Example 1:

Time: Weekdays, 08:30 – 19:30

Condition: Temperature (data address C11) >27°C

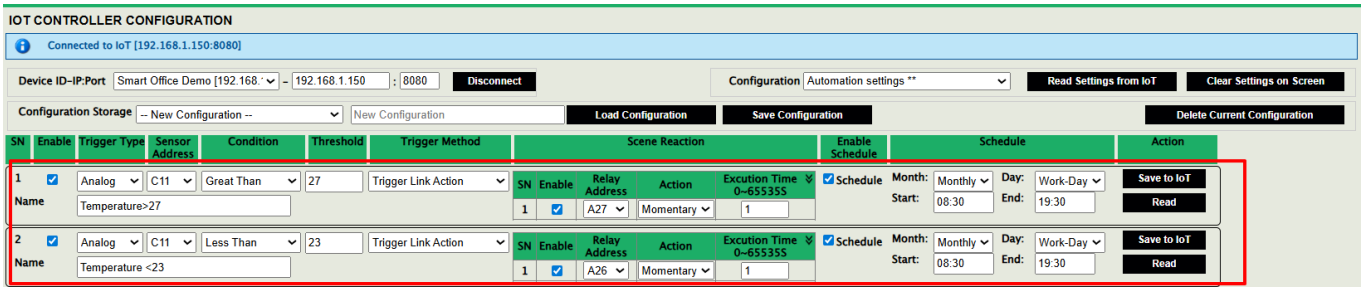
Action: Trigger A27 → Send IR Command: 0210002A00030602E45A100000A0E0 (Turn on AC, Cool mode and set to 26°C)

Automation Example 2:

Time: Weekdays, 08:30 – 19:30

Condition: Temperature (data address C11) <23°C

Action: Trigger A26 → Send IR Command: 0206002500009832 (Turn off AC)



7. Initial System Configuration

7.1 Verify Default Settings

Preset Configuration:

- IP Address: 192.168.1.150
- Gateway: 192.168.1.1
- Port: 8080

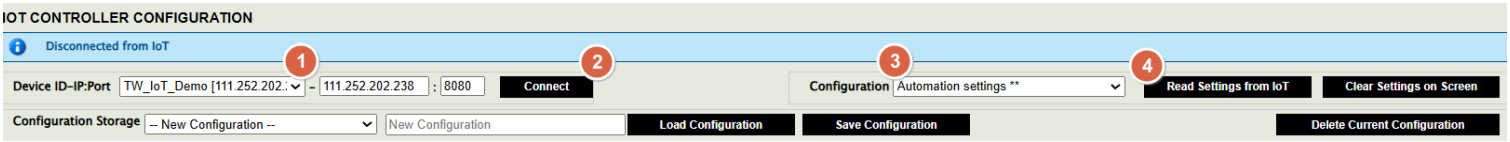
Data Addresses Verification:

Type	Address	Description
RS485	C11	Temperature
RS485	C12	Humidity
RS485	C13	Formaldehyde
RS485	C14	PM2.5
RS485	C15	TVOC

Type	Address	Description
RS485	C16	PM10
RS485	C17	CO_2
RS485	C20	Lux
DI	B01	Infrared Proximity Sensor
DI	B02	Smoke Sensor
Relay	A01	Close Window
Relay	A02	Corridor Lighting
Relay	A03	Ventilation
Relay	A08	Smoke Alarm
Virtual	A26	Turn off AC
Virtual	A27	Turn on AC

7.2 Configure Edge Control Automation

1. **Access Edge Control Page:**
    - Navigate to: http://localhost/AccessManager/IoTControl/frmIoTActionConfig.aspx
    - Select controller from Device ID dropdown
    - Click [Connect]
    - Select [Automation settings]
    - Click [Read Settings from IoT]



2. **Example Automation Setup: Automation 1: Temperature-Based AC Control (Cooling)**
    - Time: Weekdays, 08:30 – 19:30
    - Condition: C11 > 27°C
    - Action 1: Trigger A27 (Turn on AC, Cool mode, 16°C)
    - Action 2: Trigger A01 (Close Window)

    Automation 2: Temperature-Based AC Control (Turn Off)

    - Time: Weekdays, 08:30 – 19:30
    - Condition: C11 < 23°C
    - Action: Trigger A26 (Turn off AC)

Automation 3: Evening AC Shutdown

- Time: Everyday
- Condition: When 20:00
- Action: Trigger A26 (Turn off AC)

Automation 4: CO_2 Ventilation

- Condition: C17 > 600ppm
- Action: Turn on A03 for 1800 seconds (30 minutes)

Automation 5: Motion-Activated Lighting

- Condition: C20 < 100 AND B07 = "1"
- Action: Turn on A02 for 30 seconds

Automation 6: Infrared Proximity Sensor

- Condition: B01 = "1"
- Action: Turn on A01 for 10 seconds

Automation 7: Smoke Alarm

- Condition: B02 = "1"
- Action: Turn on A08 (Open emergency exits and sound alarm)

3. **Save Configuration:**
   - Click [Save to IoT] to upload automation rules to controller
   - Controller will now operate autonomously based on these rules

---

8. Testing and Verification

8.1 Power and Communication Test

1. **Verify Power Indicators:**
   - IoT Controller power LED: ON (solid green)
   - Sensors power indicators: ON
   - Network link LED: ON (blinking indicates activity)
2. **Test Network Connectivity:**
   - Ping controller IP address from computer
   - Access AMS web interface successfully
   - Verify controller appears in device scan

8.2 Sensor Reading Verification

1. **Check Sensor Data:**
    - Navigate to IoT Controller Status page
    - Verify real-time readings from all sensors:
        - Temperature (C11): Displays current room temperature
        - Humidity (C12): Displays current humidity percentage
        - CO_2 (C17): Displays CO_2 concentration
        - Lux (C20): Displays light level
        - Other AQI parameters display valid values
2. **Sensor Response Test:**
    - Cover Lux sensor: Value should decrease
    - Breathe on CO_2 sensor: Value should increase

8.3 Relay Operation Test

1. **Manual Relay Test:**
    - Using AMS software, manually trigger each relay (A01-A08)
    - Listen for relay click sound
    - Verify connected loads activate/deactivate
    - Check relay status indicators on controller
2. **Touchscreen Wall Switch Test:**
    - Press each button on touchscreen
    - Verify corresponding relay activates
    - Test "All On" and "All Off" scenes
    - Test "Next Scene" function

8.4 Automation Test

1. **Trigger Conditions:**
    - Simulate temperature change (if possible) or wait for condition
    - Verify automation rules execute as configured
2. **Monitor System Response:**
    - Check that actions occur as programmed
    - Verify timing is correct (e.g., 30-second delays)
    - Ensure multiple automations do not conflict

Appendix A: Technical Specifications

ACTA208 IoT Controller

- **Model:** ACTA208
- **Power Input:** 12VDC, 2A
- **Relay Outputs:** 8 channels
- **Relay Rating:** 277VAC, 50A per channel
- **Communication:** RS485, Ethernet (RJ45)
- **Protocol:** Modbus RTU (RS485), TCP/IP, MQTT
- **Operating Temperature:** 0°C to 50°C
- **Humidity:** 10% to 90% RH (non-condensing)
- **Dimensions:** 300mm x 400mm x 80mm (typical demo board)
- **Mounting:** DIN rail or wall mount

Appendix B: Default Configuration Summary

Network Settings:

- IP: 192.168.1.150
- Gateway: 192.168.1.1
- Port: 8080

Sensor Addresses:

- C11-C17, C20: RS485 sensors
- B01,B02:Digital inputs sensors

Relay/Virtual Addresses:

- A01-A08: Physical relays
- A25-A27: Virtual relays (IR commands)

Appendix C: Contact Information

Technical Support

Website: www.jakinid.com
Email: support@actatek.com
Knowledge Base: http://www.jakinid.com/supportkb/

Regional Offices

Asia and Rest of World
Unit 913-914, 9/F., Worldwide Industrial Centre
43-47 Shan Mei Street, Fotan, Shatin, N.T., Hong Kong
Tel: +852 2319 1333

Americas
411-1221 Homer St, Vancouver BC V6B 1C5, Canada
Phone: +1 604 314 7628

Europe, Middle East & Africa
118 Pall Mall, London SW1Y 5EA, U.K.
Phone: +44 118 328 2982