JakinID

ACTAtek IoT PLATFORM

STANDARD OPERATING PROCEDURE & CONFIGURATION GUIDE



RS-485 Energy Meter Integration & Dashboard Configuration Guide

Step-by-step technical guide for wiring an RS-485 Modbus Energy Meter to an ACTAtek IoT Controller, mapping electrical holding registers, and deploying real-time telemetry tiles on the ACTAtek IoT Devices Dashboard.

PHASE 01 | HARDWARE PREPARATION & RS-485 WIRING

Step 1: Verify Energy Meter Serial Communication Settings

- Confirm that the energy meter's serial communication baud rate is configured to **9600 bps** prior to bus connection.
- Ensure the Modbus slave address (e.g., **Address 5** in the reference setup below) and parity/stop bit settings match your RS-485 bus configuration.

Step 2: Connect RS-485 Communication Wiring

- Wire the energy meter to the **ACTAtek IoT Controller** via twisted-pair **RS-485** cabling (connect **A / D+** to **A / D+** and **B / D-** to **B / D-** on the designated collection port, such as **485-1**).

Step 3: Power On Devices

- Apply power to both the **Energy Meter** and the **ACTAtek IoT Controller**, and verify that status indicators confirm normal operation.

PHASE 02 | IOT CONTROLLER CONNECTION & MODBUS REGISTER MAPPING

Step 4: Open IoT Controller Configuration in ACTAtek Web Console

- Log in to the **ACTAtek Reader** web administration portal (e.g., **http://192.168.1.97/admin.html**).
- In the left navigation sidebar under **Terminal**, click **IOT Devices Dashboard**.
- On the top action toolbar, click **IoT Controller Config**.

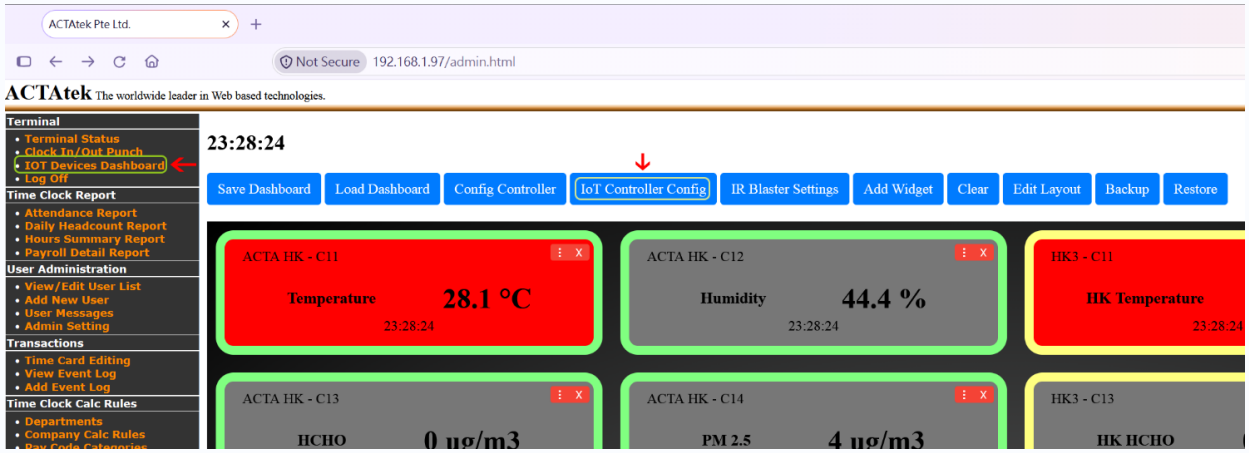


Figure 1: Navigating to IoT Devices Dashboard -> IoT Controller Config.

Step 5: Establish TCP Connection to the IoT Controller

- In the **IoT Controller** connection panel, select the target controller from the dropdown list or enter its IP address and port (e.g., **ACTA HK [192.168.1.80:8080]**).
- Click **Connect** and verify that the status indicator turns green (**Connected**).

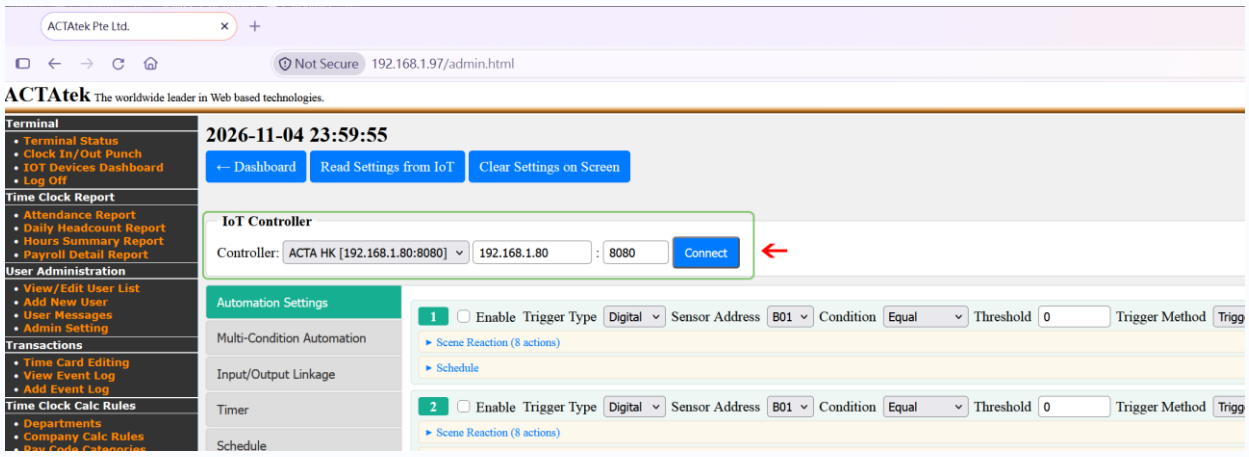


Figure 2: Establishing a TCP connection with the ACTAtek IoT Controller.

Step 6: Navigate to RS-485 Sensor Configuration

- Once connected, optionally click **Read Settings from IoT** to load existing sensor slots from the controller.
- In the left configuration sub-menu, select **Add 485 Sensor** to register the energy meter parameters as standard RS-485 Modbus sensors.

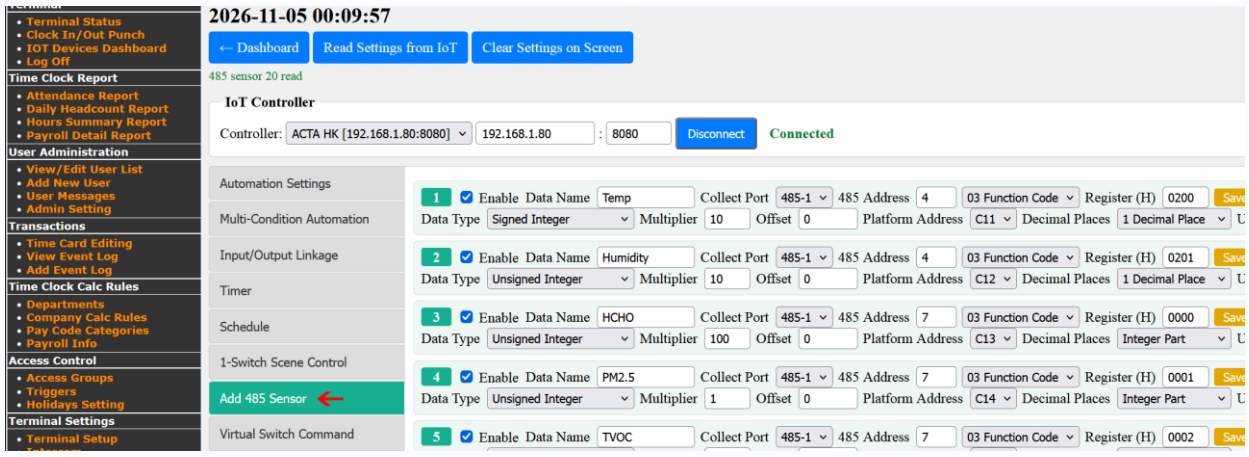


Figure 3: Selecting the 'Add 485 Sensor' menu while connected to the IoT Controller.

Step 7: Configure & Save Energy Meter Modbus Registers

- Enable the sensor slots (e.g., **Slots 11 to 18**), assign each **Data Name**, select **Collect Port (485-1)**, input the meter's **485 Address (5)**, and select **03 Function Code**.
- Enter the corresponding hexadecimal **Register (H)**, **Data Type**, **Multiplier**, **Offset**, **Platform Address (C21–C28)**, **Decimal Places**, and **Unit** as detailed in the reference table below.
- Click **Save to IoT** on each row to write the register configuration to the controller, and use **Read** to verify live polling.



Figure 4: Mapping Energy Meter Modbus registers (Slots 11–18 -> Platform Addresses C21–C28) and saving to the IoT Controller.

Reference Table: Energy Meter RS-485 Register Mapping (Shown in Figure 4)

Slot	Data Name	Port / ID / Func	Reg (H)	Data Type	Mult / Offset	Platform ID	Decimals / Unit
11	`Voltage`	485-1 / ID 5 / 03	`1000`	Signed Double Word	100 / 0	**C21**	3 Dec / VAC
12	`Current`	485-1 / ID 5 / 03	`1002`	Signed Double Word	1000 / 0	**C22**	3 Dec / Amp
13	`PowerAct`	485-1 / ID 5 / 03	`1004`	Signed Double Word	1234.5 / 10000	**C23**	3 Dec / KW
14	`Q_Reactive`	485-1 / ID 5 / 03	`1006`	Signed Double Word	1234.5 / 10000	**C24**	3 Dec / KVAR
15	`PF`	485-1 / ID 5 / 03	`100A`	Signed Double Word	1000 / 0	**C25**	3 Dec / (None)
16	`Freq`	485-1 / ID 5 / 03	`100C`	Signed Double Word	100 / 0	**C26**	3 Dec / Hz
17	`Imp_kWh_Tot`	485-1 / ID 5 / 03	`1012`	Signed Double Word	1000 / 0	**C27**	3 Dec / kWh
18	`E_Rea_Tot`	485-1 / ID 5 / 03	`101C`	Signed Double Word	1234.5 / 10000	**C28**	3 Dec / kWh

PHASE 03 | DASHBOARD WIDGET CONFIGURATION & DEPLOYMENT

Step 8: Return to the IoT Devices Dashboard

- After saving all energy meter registers to the controller, click the **<- Dashboard** button in the top-left corner of the workspace to return to the main dashboard view.

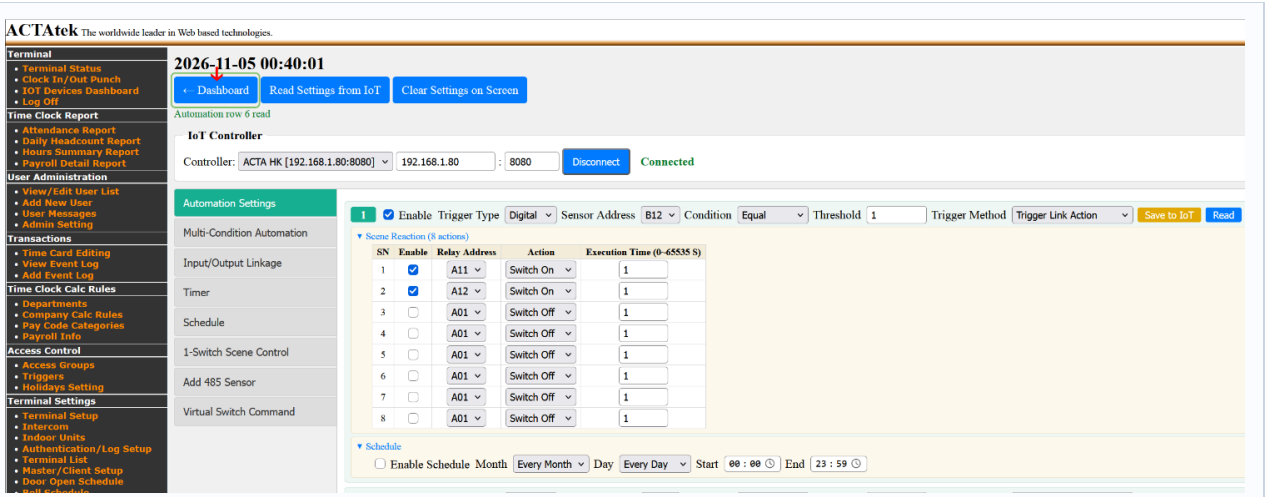


Figure 5: Clicking '<- Dashboard' to return to the main IoT Devices Dashboard.

Step 9: Open the Add Widget Dialog

- On the **IoT Devices Dashboard** toolbar, click **Add Widget** to create a new telemetry display tile.

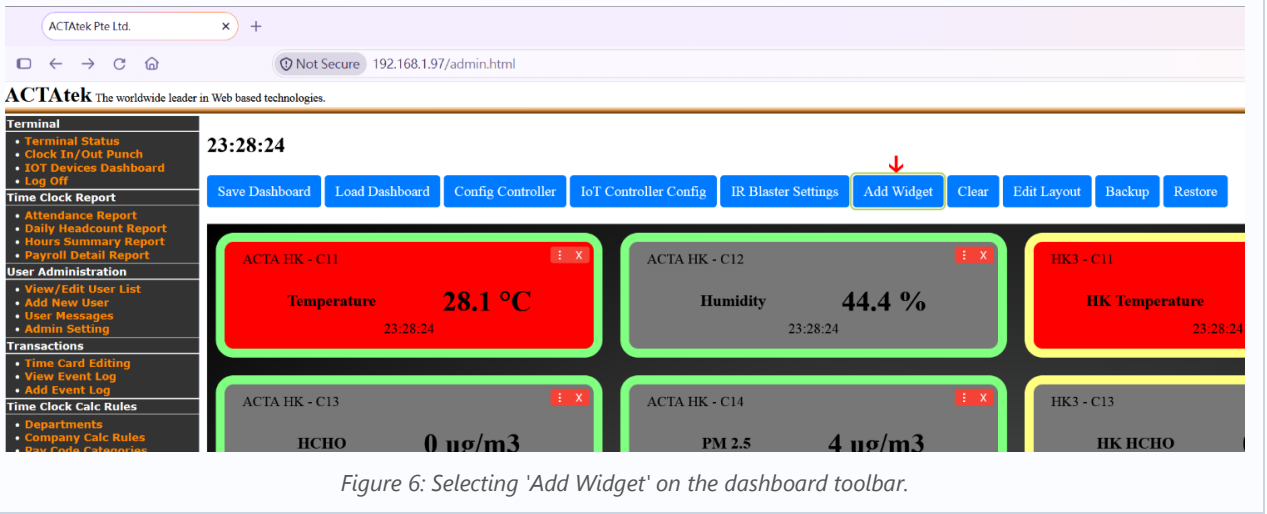


Figure 6: Selecting 'Add Widget' on the dashboard toolbar.

Step 10: Configure Electrical Parameter Widget Properties

- In the **Add Widget** modal dialog, configure the following fields for each electrical parameter:
- **Controller:** Select the target IoT controller (e.g., **ACTA HK (192.168.1.80)**).
- **ID:** Select the corresponding **Platform Address** mapped in Step 7 (e.g., **C21** through **C28**; **C27** shown in example).
- **Description:** Enter a descriptive display label (e.g., **Import Energy (Act)**, **Meeting RM Aircon Voltage**, **Grid Frequency**).
- **Unit & Styling:** Select the appropriate **Unit** (e.g., **Energy (kWh)**), choose the **Border Color**, and optionally configure threshold **Alert Condition / Value / Color** settings.
- Click **Add** to place the widget onto the dashboard canvas. Repeat Steps 9–10 for all remaining electrical parameters (**C21–C28**).



Figure 7: Configuring the 'Add Widget' parameters (Controller, Platform ID C27, Description, Unit, and Border Color).

Step 11: Verify Live Electrical Parameters on the Dashboard

- Confirm that all newly added electrical parameter tiles (**C21–C28**: Voltage, Current, Frequency, Active Power, Reactive Power, Power Factor, Import Active Energy, and Export Reactive Energy) appear on the dashboard and display live readings.

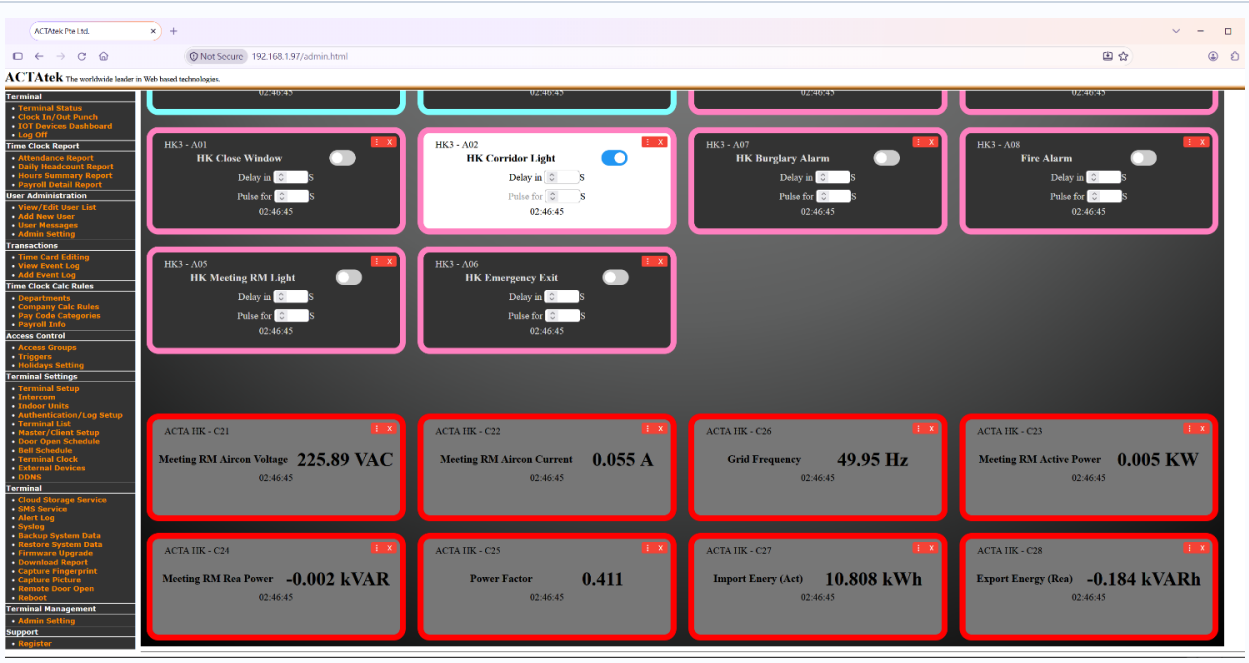


Figure 8: Live electrical telemetry tiles (C21–C28) displayed on the ACTAtek IoT Devices Dashboard.

Step 12: Save the Dashboard Layout

- Click **Save Dashboard** on the top-left button bar to permanently store the new widget layout and configuration.



Figure 9: Clicking 'Save Dashboard' to commit the updated dashboard layout.