

S01 / IMPLEMENTATION

# Campus utility metering

Bring existing meters into one energy application

AI concept scene, not a customer-site photograph. Final configuration is project-specific.

# Customer need and Phase-1 scope

Primary: YZW300L; assess YZW280 for wired acquisition

## Customer context

For campus utility rooms and building metering retrofits. Existing meters have separate interfaces and register formats; the upstream application also needs a clear indication of data freshness.

Pilot assumption: one utility room, one gateway and three existing Modbus meters. These quantities explain the method; they are not bus-capacity guarantees.

**01** Read agreed totals, instantaneous values and status; Phase 1 is read-only.

**02** Record units, scaling, byte order and timestamps in a traceable point list.

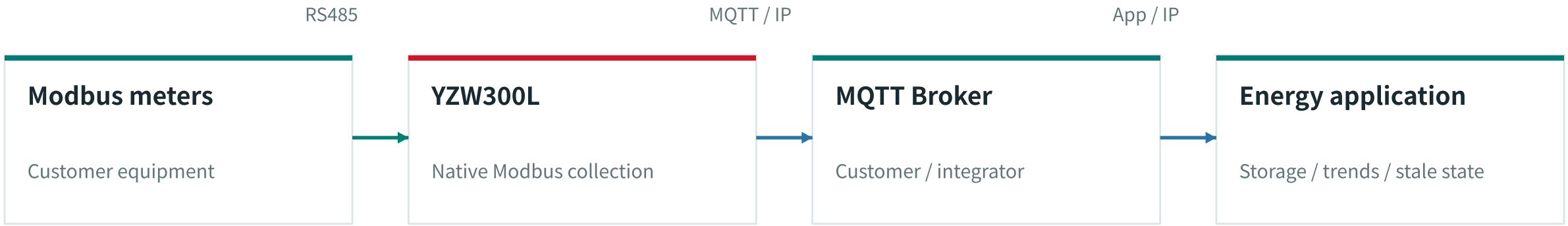
**03** Report through Ethernet or cellular IP to the customer's MQTT / energy application.

## Explicit exclusions

Excludes legal-metrology certification, billing settlement and live electrical work. Historical replay after outages and savings percentages are not assumed.

# System architecture and ownership

Every link has a defined medium; field devices and applications are project equipment.




Optional workflow: transform and route an agreed data feed without taking the serial port from its owner.

Ethernet / IP
Serial / state, labelled
LoRaWAN radio
DC / PSE / control

# Equipment and selection conditions

Pilot quantities only. Separate standard items, project options and customer equipment in the final BOM.



YZW300L has two independent RS485 ports on a 7-pin signal terminal and a separate 2-pin DC input.

9–36V DC input; DIN-rail installation; IP30, requiring a suitable cabinet.

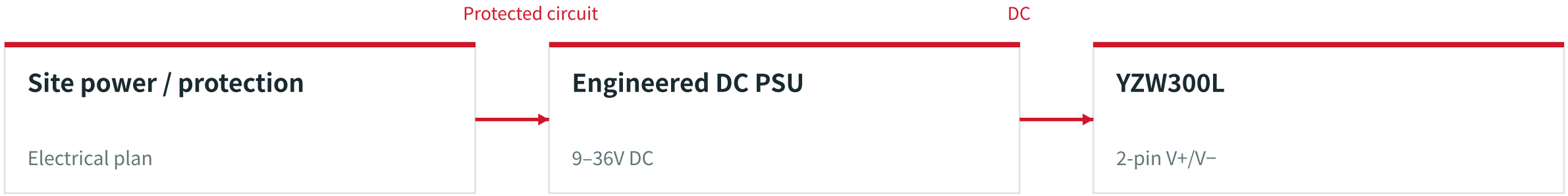
Native Modbus RTU/TCP acquisition and MQTT reporting; Node-RED can host an approved data workflow.

YZW280 also has native Modbus acquisition, but not the MT7981-specific PLC Web page.

| Component | Qty | Owner | Selection / condition |
|---|---|---|---|
| **YZW300L gateway** | 1 | EDGELOR | Acquisition and IP backhaul |
| **Existing Modbus meters** | 3 in pilot | Customer | Actual registers and serial settings required |
| **DC supply and protection** | Per BOM | Agreed BOM | Within 9–36V; separate field-load circuits |
| **Cable, terminals, cabinet** | Per site | Installer | Bus, grounding and isolation design |
| **SIM or Ethernet service** | 1 path | Customer | Carrier / APN or network permission |
| **MQTT and energy app** | 1 service | Integrator | Credentials, ACL, storage and display |

# Power and wiring boundaries

Boundary diagram, not a terminal construction drawing. Qualified personnel use approved electrical plans.




**01** A qualified electrician establishes isolation first. Wire gateway V+ / V− correctly; the signal terminal is not its DC input.

**02** Verify each meter's A/B convention, reference ground and shielding. Termination and isolation follow the bus design.

**03** Use unique slave addresses. Independent ports may run together; one physical port cannot be shared by Modbus, DTU and Node-RED at once.

**04** The gateway does not implicitly power the meters. Meter supplies, current transformers and mains remain part of the electrical design.

# Installation and site work

The scene illustrates the environment only. Add actual installation and cable photographs from the image brief.



AI concept scene; not a construction drawing or delivered-site photo.

**01** Mount in the low-voltage communications area with access to rail clips, terminals and ventilation. Separate power and signal wiring.

**02** Avoid shielding the cellular antenna inside metalwork. Specify feeders, surge protection and sealing for the actual site.

**03** Validate one meter before extending the bus. Capture local and application readings in the same observation window.

S01-H2 installation set + S01-H3 wiring set: capture after real site implementation.

# Workflow, platform and security

A delivered message is not proof of equipment state. Diagnose from the last verified layer.

**1** **Acquire**

Confirm function, address base, length, type and byte order.

**2** **Map**

Separate totals from instantaneous values; record units, scaling and freshness.

**3** **Process / publish**

Use one serial owner. An optional Node-RED flow consumes an agreed MQTT feed.

**4** **Handle failures**

Mark stale / missing values; do not present the last sample as current. Test any replay separately.

## Platform and operating conditions

- The integrator provides broker endpoint, accounts, CA and topic ACL. Claim TLS only when both ends support and use it.
- Map meter IDs to gateway SNs. Resolve any enabled SN topic suffix instead of guessing topics.
- Disable writes in Phase 1. The application owner approves retention, backup and alarm thresholds.

# Commission in order and keep evidence

Validate one layer at a time before outputs or remote changes.

| Task | Pass evidence | First checks on failure |
| --- | --- | --- |
| **01 Collect point list** | Address, unit, scaling and access for every point. | Obtain missing definitions from the meter vendor. |
| **02 Read one meter** | Raw reading agrees with the local display. | Check A/B, slave ID, baud and parity. |
| **03 Validate decoding** | Correct sign, scaling, totals and byte order. | Inspect raw registers and address base. |
| **04 Receive telemetry** | Current values arrive on the actual broker topic. | Check auth, ACL, endpoint and suffix. |
| **05 Interrupt a link** | The app marks data stale after the agreed limit. | Separate serial failure from IP failure. |
| **06 Archive / retest** | Backups, mappings and evidence are traceable. | Recheck real readings after restoration. |

# Acceptance and ownership

Agree duration, thresholds, samples and sign-off owner before testing. These are acceptance categories.

| Test | Evidence to keep |
| --- | --- |
| **Accuracy** | Compare each point with the meter; agree tolerances from resolution and use. |
| **Freshness** | Agree sampling, reporting and stale limits; record observed intervals. |
| **Recovery** | Test IP loss, bus loss and restart separately; do not assume lossless history. |
| **Access** | Read-only policy holds; unauthorized control publishing is rejected. |

## Delivery ownership

- EDGELOR: agreed equipment, applicable documentation and contracted configuration support.
- Customer / integrator: protocols, platform, accounts, licences, thresholds and publication rights.
- Installer / engineers: electrical work, mounting, protection, actual commissioning and joint sign-off.

# Handover and open engineering items

Suitable for project discussion and a website reference solution. Resolve the open items before construction.

## Handover and diagnosis

Deliver equipment / wiring lists, register mapping, actual topics and redacted payloads, backups, comparison evidence and recovery records. Diagnose from meter to bus to receiving application.

## Confirm before implementation

**01** Meter models, protocols and complete registers.

**02** Point count, sampling / reporting and stale limit.

**03** Bus length, isolation, grounding and DC plan.

**04** Broker owner, schema, TLS support and retention.

### Evidence (physical PDF pages)

DS300L V1.5 • P6–13 / DS280 V1.5 • P3–6

MOD12 V1.2 • P7–18 / P26–34

/solutions/data-acquisition/ • 2026-11-06

Detailed paths and source hashes: companion evidence register.

Related website category

www.edgelor.com