

S03 / IMPLEMENTATION

LoRaWAN farm monitoring

From distributed sensors through a local LNS to the application

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

Customer need and Phase-1 scope

Outdoor: YZW900L; assess YZW300L for cabinet installations

Customer context

For greenhouses, orchards and field trials where cabling is difficult. Soil and environmental telemetry requires explicit ownership of sensor payloads, regional radio settings and decoding.

Pilot assumption: one gateway and six compatible LoRaWAN sensors. Survey distant and obstructed points first; no fixed range or battery-life claim is made.

01 Onboard region-compatible nodes, decode uplinks and receive application data.

02 This design uses built-in ChirpStack and an approved Node-RED relay to the customer broker. External LNS is a different design.

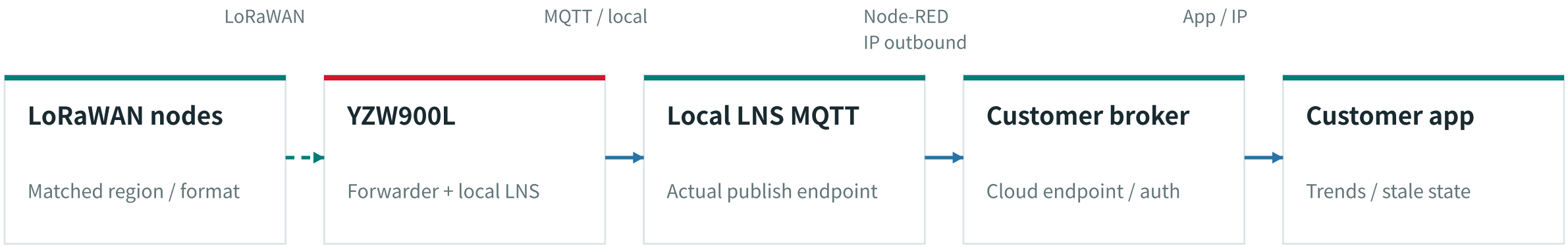
03 Phase 1 covers monitoring and notifications only; irrigation control needs separate safety and feedback design.

Explicit exclusions

A proprietary LoRa device is not automatically a LoRaWAN node. No universal plug-and-play, unlimited node count or lossless offline history is assumed. The gateway does not directly drive pumps.

System architecture and ownership

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



Local LNS is selected. The customer broker is not the internal broker: configure and test the Node-RED relay, credentials and topics. Keep internal 1883 private; buffering / replay requires a separate test.

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.



Standard: one SX1302 with eight channels. A second concentrator and its antenna are optional.

Built-in ChirpStack and Node-RED; payload decoding must match the node.

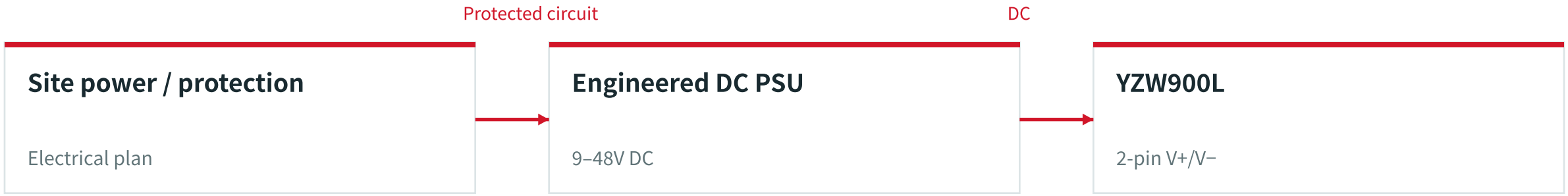
2-pin 9–48V DC, pole mounting; this model does not accept PoE power.

RS485 A/B is internal, not exposed through the enclosure; do not draw an external serial connector.

Component	Qty	Owner	Selection / condition
YZW900L / regional antenna	1 set	EDGELOR	Single concentrator baseline
LoRaWAN sensors	6 in pilot	Agreed BOM	Payload, region, keys and mounting
DC / outdoor protection	Per BOM	Installer	9–48V, sealing, earth and surge design
SIM / Ethernet	1 path	Customer	Coverage and measured traffic budget
LNS and MQTT	Chosen design	Agreed	Local or external; identify actual broker
App / notifications	1 service	Integrator	Trends, stale state and recipients

Power and wiring boundaries

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



01 Supply 9–48V DC to V+ / V– and engineer the PSU and protection. Do not use a PoE injector for YZW900L.

02 Each sensor has its own specified power source. Node vendor confirms batteries and maintenance; the radio link carries no power.

03 Engineer mast, lightning protection and grounding; select glands and seals for actual cable diameters.

04 Any valve expansion needs its own node, voltage, driver, fail position and physical feedback 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 Survey structures, vegetation, terrain and target points before choosing mast height; the illustration is not a construction dimension.

02 Use LORA1; LORA2 only with its option. Match cellular, GPS and Wi-Fi antennas to the ordered hardware.

03 Follow sensor requirements for depth, shielding, drainage and service access. Photograph gateway and node power paths.

S03-H2 installation set + S03-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 **Activate nodes**

Match region, profile, DevEUI / JoinEUI and keys. Never publish credentials.

2 **Forward / process**

Node > forwarder > receiver / bridge > local LNS. PHYPayload is not decoded application data.

3 **Relay events**

Read actual local LNS MQTT events; an approved Node-RED flow publishes to the customer broker. A separate broker receives nothing automatically.

4 **Notify / confirm**

Application or approved flows implement thresholds. A queued downlink is not proof of physical action.

Platform and operating conditions

- Separate gateway, LNS and MQTT identities; change initial passwords and restrict management access.
- Subscribe using actual applicationId and devEui. applicationId is not JoinEUI; version the payload decoder.
- UDP 1700, LNS Web 8080, internal MQTT 1883 and an independent customer broker have different roles. Confirm actual endpoints and protection.

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 Match region	Node, gateway, antenna and permitted region agree.	Replace mismatched hardware; software alone is not enough.
02 Bring up IP	Gateway and chosen LNS endpoint are reachable.	Check DC, APN, DNS and ports.
03 Activate	LNS sees the gateway and target activation events.	Check EUIs, keys, region and profile.
04 Decode	Known readings map to correct fields and units.	Use the real payload, FPort and vendor format.
05 Survey worst points	Obstructed / distant nodes meet the agreed window.	Relocate and retest; one RSSI reading is insufficient.
06 Loss / alarm	Backhaul loss and missing nodes are distinguished.	Isolate RF, LNS, broker and app faults.

Acceptance and ownership

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

Test	Evidence to keep
End-to-end	Compare each sensor value, LNS event, decode and application field.
RF quality	Use agreed duration and valid uplinks, not a universal range claim.
Offline state	Distinguish node loss and IP loss; do not assume historical replay.
Credentials	Public visuals are redacted; transfer secrets through controlled channels.

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 a redacted node register, controlled credentials, radio plan, decoder version, LNS / broker layout, site map and uplink tests. Diagnose power, RF, LNS, MQTT and application in order.

Confirm before implementation

01 Country / region and complete node protocol.

02 Node count, intervals, payload and battery plan.

03 LNS location, actual broker and app ownership.

04 Terrain, mast, lightning protection and RF test plan.

Evidence (physical PDF pages)

DS900L V1.5 • P2–4 / P11–17

LORA14 V1.4 • P3–14 / P16–21

/solutions/remote-connectivity/ • 2026-11-06

Detailed paths and source hashes: companion evidence register.

Related website category

www.edgelor.com