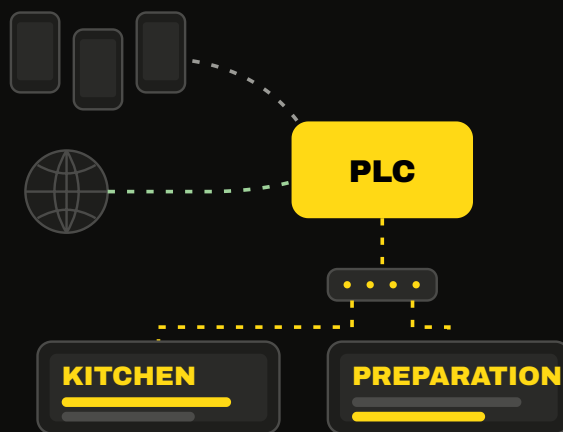


RESTAURANTS · ESP32 PLC 21

Every order, one path to the kitchen.

A WiFi PLC collects the orders. Panel PCs show them in the kitchen.

[Read the interactive case study online ›](#)



Schematic illustration

3

ways to order: staff, a customer app, delivery by website or phone

2

links into the PLC: WiFi and Ethernet

2

screen views: the kitchen and the preparation area

1

controller at the centre of every order

THE CHALLENGE

Many ways to order. One kitchen that must not lose an order.

Customers order in different ways: at the table, with their own phone, from the website or by phone. The kitchen and the preparation area need every order on their screens, each with the details they need. And everyone needs to know where an order is, until the food reaches the customer.

01

Many ways to order

Staff enter the orders at the table. Customers order with their own phone or tablet in the restaurant, through an app.

02

One controller for all of them

All the orders go to a PLC over WiFi or Ethernet. The PLC is the centre of control and processes each order.

03

Each team sees its own view

The kitchen screens show only what the cooks need. The preparation area sees all the details, to check that nothing is missing.

04

Follow every order

Cancel an order, mark the dishes that are done, and track the order at every step until the customer has the food.



A system that changes with the restaurant

The hardware can be modified and the software reprogrammed for every small change: a new menu, a new screen, a new way to order.

HOW IT WORKS

Three stages: take, prepare, deliver.

Stage 1 · Take the order

Four ways in. One controller.

Staff enter the orders on a Panel PC. Customers order with their own phone or tablet over WiFi. Delivery orders come from the website, or by phone: the staff type the call into a Panel PC, as for an order at the table.

- Staff and phone calls: Panel PC, Ethernet
- Customer app in the restaurant: WiFi

Stage 2 · Prepare it

The same order, two screens.

The PLC sends the order to the Panel PCs over Ethernet, through a switch. The kitchen screen shows only the dishes and their notes. The preparation area screen shows every detail, to check that nothing is missing before the order leaves.

- Kitchen view: dishes and notes only
- Preparation view: the whole order

Stage 3 · Get it to the customer

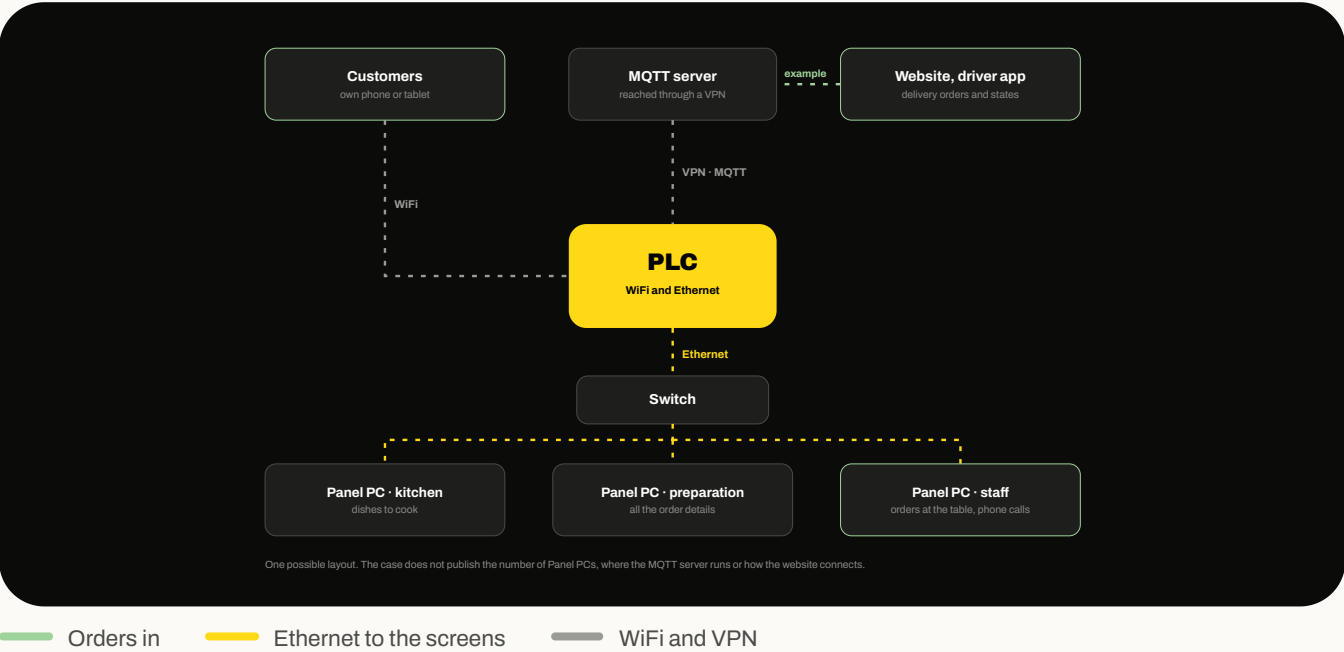
Track the order until the food arrives.

Each step updates the order in the PLC, and every screen sees the new state. For delivery, the drivers control their orders with their own version of the app, on their phone.

- One state per order, the same on every screen
- Drivers update their orders from the app

How does a PLC run a restaurant order system?

A PLC with WiFi and Ethernet collects the orders from every channel. Customers in the restaurant send them over WiFi from their own phones and tablets. Staff enter them on Panel PCs, which are wired to the PLC over Ethernet through a switch. The PLC processes each order and sends it to the Panel PCs in the kitchen and in the preparation area, each with its own interface made with Node-RED. An MQTT server, reached through a VPN, connects the PLC with the outside. A website, driver app, delivery orders and states.



Orders and data

Data	Between	Link	Purpose
Order at the table or by phone	Staff, Panel PC → PLC	Ethernet	The staff enter the order, also for phone calls
Order from the customer app	Phone, tablet → PLC	WiFi	Customers order with their own device in the restaurant
Delivery order from the website	Website → PLC	MQTT, VPN	Example path: the case does not publish it
Orders to the screens	PLC → switch → Panel PCs	Ethernet	Kitchen view and preparation area view
Dish cooked, order cancelled	Panel PC → PLC	Ethernet	The new state reaches every screen
Delivery state	Driver app → PLC	MQTT, VPN	Example: on the way, delivered
Remote access	MQTT server ↔ PLC	VPN	The case connects the MQTT server to the PLC through a VPN

A WiFi PLC to collect the orders. Panel PCs to show them.



ESP32 PLC 21 CORE

An industrial controller built on the dual-core ESP32, with Ethernet and Wi-Fi built in, for DIN rail. It is programmed in C++ with the Arduino IDE.

Role	Collects the orders, keeps their state, feeds the screens
Processor	ESP32 dual core, up to 240 MHz, 16 MB flash, 520 KB SRAM
Ethernet	1 x 10/100 Mbit, RJ45
Wireless	Wi-Fi 2.4 GHz, Bluetooth LE

The original case used an M-Duino PLC based on Arduino with WiFi and Bluetooth, which is no longer in the web shop. The ESP32 PLC 21 CORE does the same job today: it has both links of the case, Ethernet and Wi-Fi.

[See the ESP32 PLC 21 ›](#)



TouchBerry Pi Panel PC 10.1" FLEX

The screens of the kitchen and the preparation area. An industrial Panel PC with a Raspberry Pi 4 and a touch screen, wired to the PLC over Ethernet.

Role	Node-RED screens: order entry, kitchen, preparation area
Screen	10.1", touch
Computer	Raspberry Pi 4
Link to the PLC	Ethernet, through a switch

The case uses Panel PCs based on a Raspberry Pi 3, and the old page links the 10.1" TouchBerry Pi. The current model is the TouchBerry Pi Panel PC 10.1" FLEX, with a Raspberry Pi 4.

[See the TouchBerry Pi 10.1" ›](#)

One place for every order

Every channel ends in the PLC. So every screen shows the same order, in the same state.

Wired where it matters

The PLC and the Panel PCs talk over Ethernet through a switch. WiFi is for the phones and tablets of the customers.

Each team sees its job

The cooks see the dishes. The preparation area sees the whole order and checks that nothing is missing.

Track it to the customer

Each step changes the state of the order, from the kitchen to the table or to the door.

SIMILAR SYSTEM?

Tell us how your orders come in. An engineer will answer.

Tell us your ordering channels, how many screens you need in the kitchen and in the preparation area, and whether you deliver. We will tell you which controller and Panel PCs fit, and how to connect them.

READ IT ONLINE

industrialshields.com/case-study-restaurant-order-system-esp32-plc

EMAIL

info@industrialshields.com

PHONE

[\(+34\) 938 760 191](tel:+34938760191)