

PlcVanguard

.NET 8 Blazor application for industrial communication with Siemens S7 PLCs. Inherits production-proven logic from MHT-Siemens (legacy .NET Framework WinForms) and restructures it into a modular, testable architecture.

Build & Run

```
# Build
dotnet build solution/src/PlcVanguard.Web/PlcVanguard.Web.csproj

# Run (Blazor Server)
dotnet run --project solution/src/PlcVanguard.Web/
```

Browse to <https://localhost:5001> (or the URL shown in console).

Project Structure

```
solution/
├─ src/
│   ├─ PlcVanguard.Core/    PLC communication layer (S7.net, polling,
│   │   │                   persistence)
│   │   └─ PlcVanguard.Web/  Blazor Server UI + API glue
│   └─ PlcVanguard.slnx
```

Architecture

Layer	Project	Technology
PLC Driver	PlcVanguard.Core	S7.net 0.2.0
Pollers	PlcVanguard.Core/PLC	BackgroundService, ContinuousPoller, OnEventPoller
State	PlcVanguard.Core/State	In-memory state management
Persistence	PlcVanguard.Core/Persistence	File, Redis, MariaDB (EF Core)
UI	PlcVanguard.Web	Blazor Server, SVG charts

See [ARCHITECTURE_AND_SPEC.md](#) for full spec.

Pages

Page	Route	Description
Dashboard	/	Live counters, trendline SVG, historical records

Page	Route	Description
Comparison	/comparison	Multi-record comparison with live reference line
Counter	/counter	Single counter monitoring

Current Status

Completed (Phases 1-10)

- ☒ .NET 8 solution scaffold with 2 projects
- ☒ S7.net 0.2.0 PLC driver ([S7PlcService](#))
- ☒ Continuous poller ([ContinuousPoller](#))
- ☒ On-event poller ([OnEventPoller](#))
- ☒ Hosted service with reconnect logic ([PlcHostedService](#))
- ☒ State manager ([StateManager](#))
- ☒ Persistence: File, Redis, MariaDB (entity scaffolds complete)
- ☒ Blazor Web with DI integration
- ☒ Dashboard page with live monitoring
- ☒ Comparison page with SVG chart

Pending

- ☐ REST API Controllers ([StateController](#), [RecordsController](#))
- ☐ SignalR Hub for real-time push to clients
- ☐ Auth middleware
- ☐ EF Core database migration / seeding
- ☐ Unit tests

PLC Configuration

Default connection (in [Program.cs](#)):

Parameter	Value
IP Address	192.168.124.43
CPU Type	S7-300
Rack	0
Slot	2

Legacy Baseline

Original WinForms app: [MTH-Siemens/](#) (.NET Framework 4.0)

- Source: [MTH-Siemens/SiemenProxy.cs](#)
- Config: [MTH-Siemens/setup.json](#)
- PLC write: REAL (double) via [S7.Net.Types.Double.ToByteArray\(\)](#)

Git Workflow

Tasks are developed on `feature/` branches and merged to `develop`. Current branch: `develop`.