

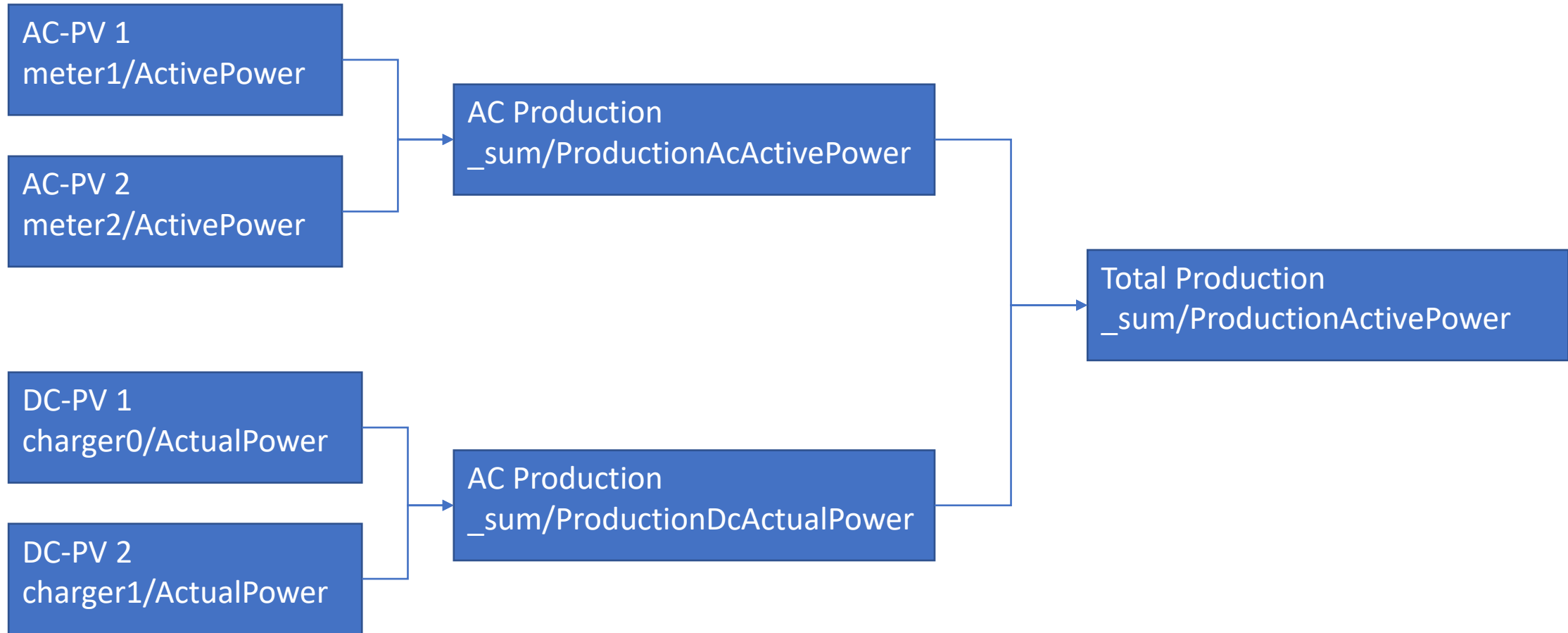
# OpenEMS

# Prediction Architecture

Project EMSIG

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# OpenEMS Production data



# OpenEMS Consumption data

- Consumption is not measured, but calculated:  
 $\text{Consumption} = \text{Storage Discharge} + \text{Grid Buy} + \text{Production AC}$

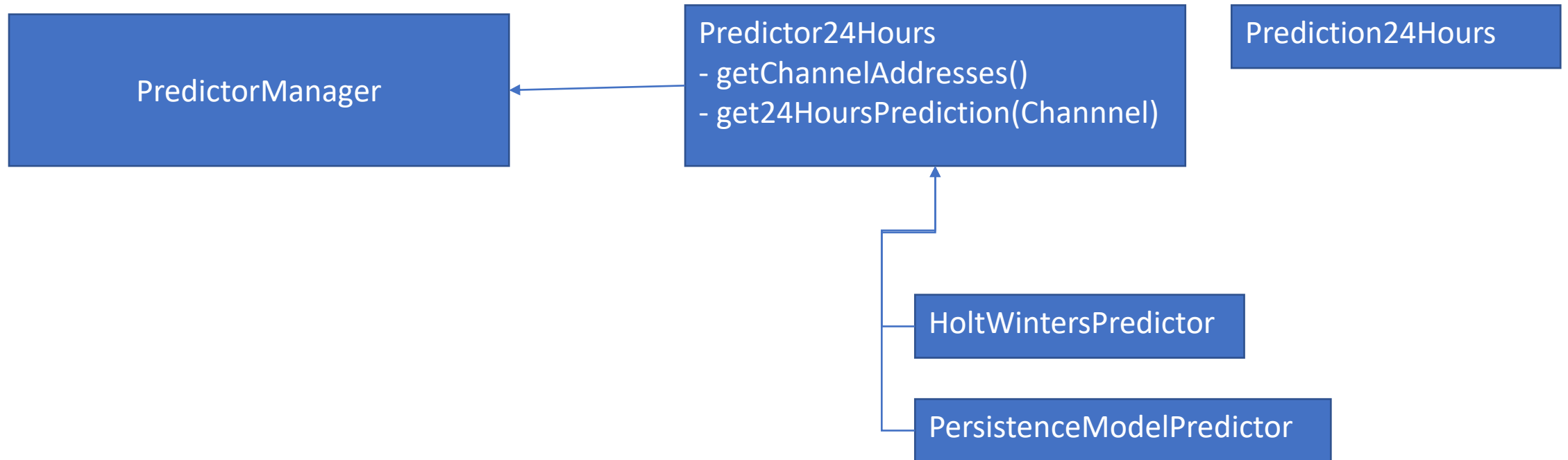
Total Consumption  
\_sum/ConsumptionActivePower

- Interesting for prediction: Non-Regulated Consumption  
 $\text{NRC} = \text{Total Consumption} - \text{Electric Vehicle Charging} - \text{Heat-Pump} - \dots$

# Use-Cases

- Get prediction for total production and total (NR) consumption for next 24 hours  
to be used by
  - „Netzdienliche Eigenverbrauchsoptimierung“  
(Predictive Delayed-Charge Controller)
  - „Hochlastzeitfenster“  
(Predictive Highloadtimeslot Controller)
  - Visualization in OpenEMS UI
  - Flexibility calculation
  - ...
- Sampling rate: 1 value per 15 minutes/1 hour

# Modular Predictors



# Example Predictor: Holt -Winters

meter: socomec: lgreennase

**Predictor Holt-Winters** ✕

Component-ID  ⋮  
Unique ID of this Component (id)

Alias  ⋮  
Human-readable name of this Component; defaults to Component-ID (alias)

Is enabled?   
Is this Component enabled? (enabled)

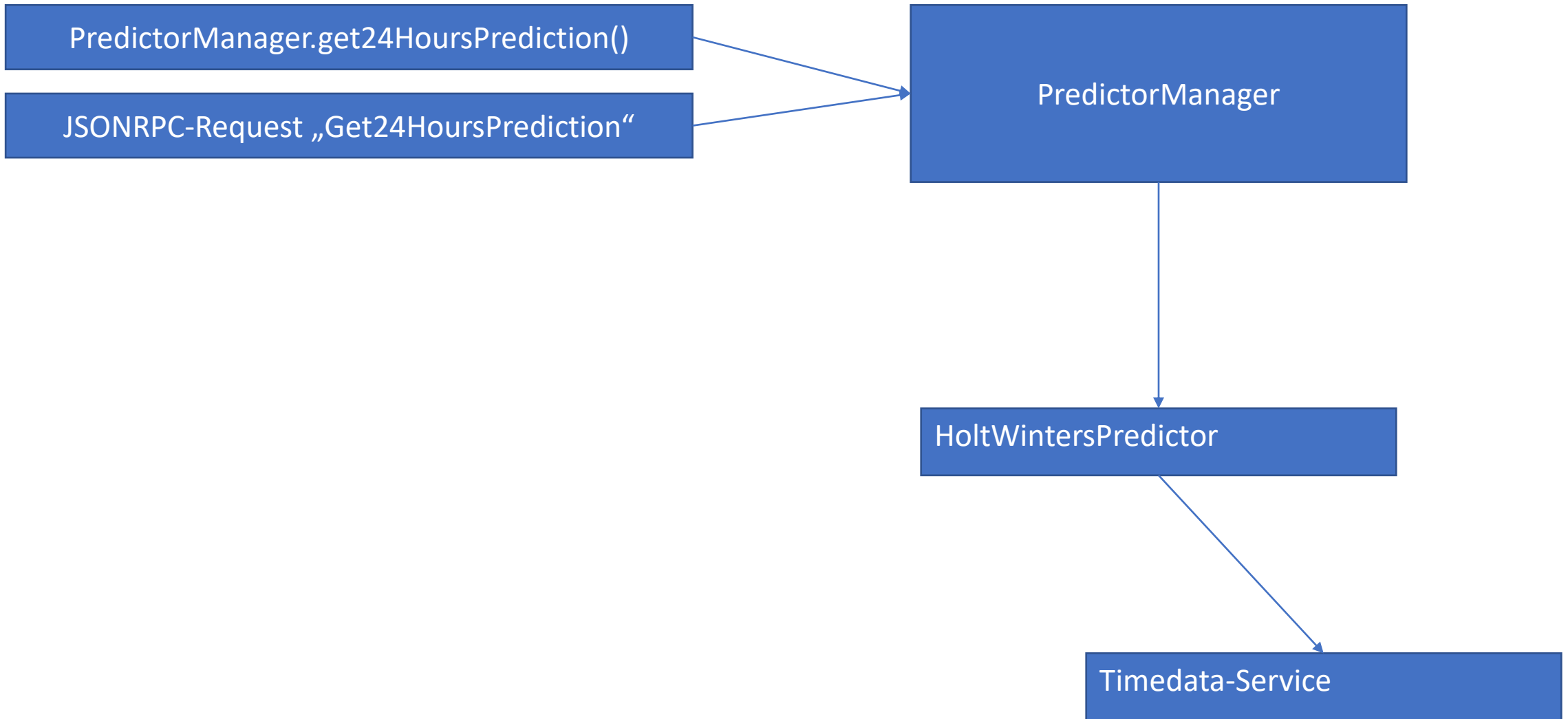
Channel-Addresses  ⋮ + -  
 ⋮ + -  
List of Channel-Addresses this Predictor is used for (channelAddresses)

**Configuration Information**

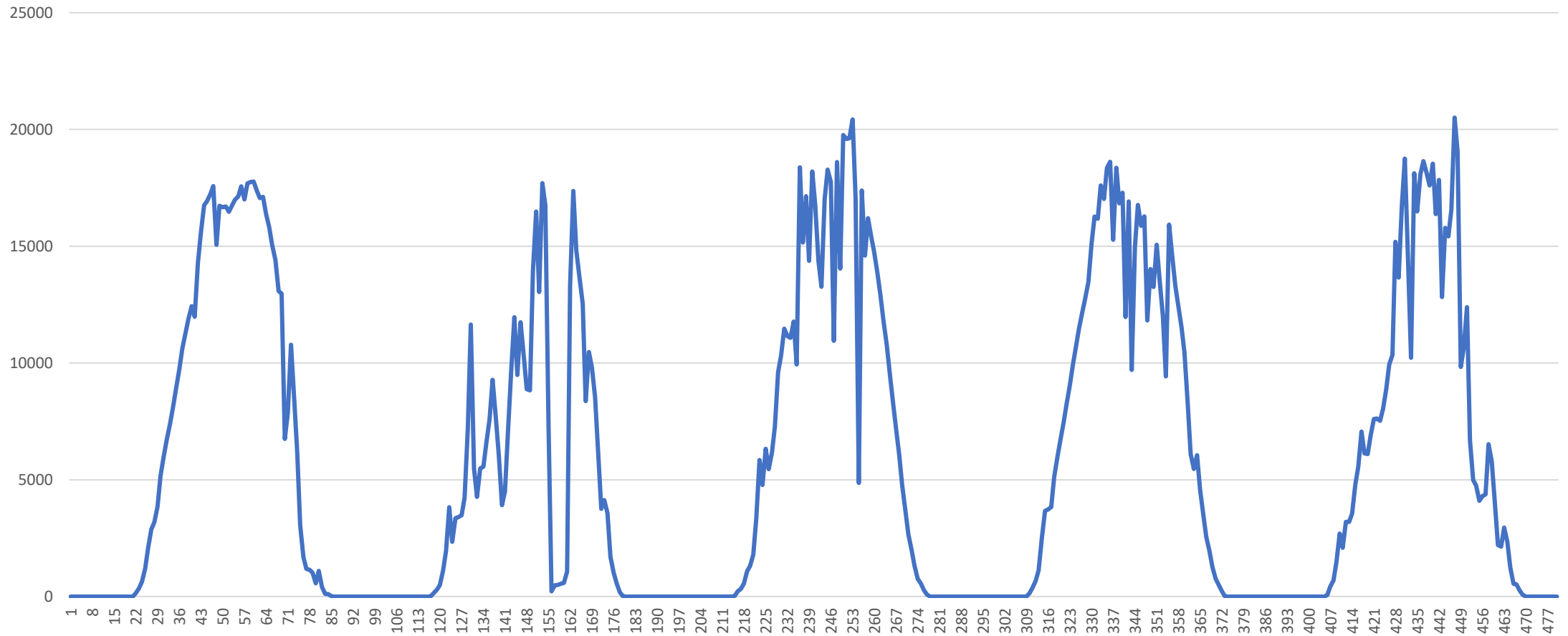
Persistent Identity (PID) Predictor.HoltWinters.174964dc-88b8-4318-bb95-2a2093bb0675

Factory Persistent Identifier (Factory PID) Predictor.HoltWinters

Configuration Binding



# Input data from Timedata-Service





# JSONRPC-Request to PredictorManager

The screenshot shows a web client interface for configuring a POST request. The title is "Get State" with a "DRAFT" label. The URL is set to "http://localhost:8084/jsonrpc" with a length of 29 bytes. The request body is a JSON object:

```
1 {
2   "method": "componentJsonApi",
3   "params": {
4     "componentId": "_predictorManager",
5     "payload": {
6       "method": "get24HourPrediction",
7       "params": {
8         "channel": "meter1/ActivePower"
9       }
10    }
11  }
12 }
```

The interface also shows headers: "Authorization: Basic YWRtaW46YV" and "Content-Type: application/json".



# Result

