

ZYGGOT[®] SG

Low Cost Disruptive System for Continuous Temperature Monitoring



ZYGGOT® SG System

The ZYGGOT SG system was designed to complement other Varixx solutions in the ZYGGOT family, providing continuous, real-time monitoring of temperatures at internal and external connections of medium-voltage switchgear drawers, as well as shielded busbars. With a design optimized for easy installation, the solution ensures high reliability and excellent cost-effectiveness, enabling early detection of thermal faults and contributing to operational safety and predictive maintenance of electrical systems.

Main Advantages and Features

TESTABLE WITH SYSTEM TURNED OFF

MONITORS SENSOR STATUS

NO BATTERY REQUIRED

ETHERNET (MODBUS OVER ETH)

HIGH INSULATION - 3000 VAC

HIGH RELIABILITY - CONTACTLESS

NETWORKED SMART SENSORS

MODBUS RTU (RS485 PORT)

REAL TIME CLOCK BY ETHERNET (NTP)

HIGHLY EASY TO INSTALL

RESTful API (FOR EMBEDDED APLIC.)

LOW ACQUISITION AND INSTALLATION COST

AUTO ADDRESSING OF SENSORS

IEC 61850 FOR SUBSTATIONS

HAS AN ETHERNET PAGE SERVER

HIGHLY SCALABLE

MQTT (IoT - INTERNET OF THINGS)

ETHERNET REMOTE CONTROL

PROGRAMMABLE ALARM LEVELS

Smart Sensors

Smart, compact sensors connected via a “One Wire” network, featuring automatic detection and addressing. Encapsulated in high-temperature polycarbonate, they are powered directly by the network itself, ensuring continuous operation. If one sensor fails, the others continue to function normally, ensuring greater reliability and robustness for the system. The two types of sensors available are:

Single Port and Dual Port

Dual Port sensors can be daisy-chained up to 25 sensors per gateway channel (maximum of 16 when using a ZYGGOT SG relay) and up to 300 meters of cable.

200 Sensors

Support for up to 200 sensors per gateway.



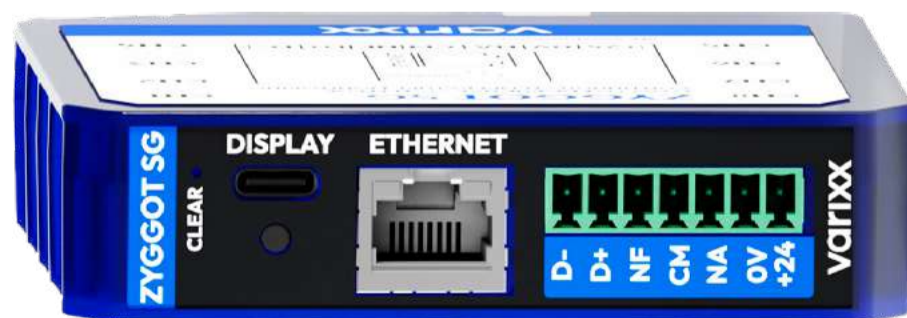
Single Port smart sensor with gold-plated terminal.



Smart vertical Dual Port sensor with gold-plated terminal



Smart Dual Port horizontal sensor with gold-plated terminals



Capacity for up to 200 sensors.

Application of up to 200 sensors per Gateway

The most disruptive system on the market

The ZYGGOT SG system was developed to meet the demand for reliable, low-cost monitoring in rack cabinets in colocation facilities and data centers. With quick and simplified installation, it does not require manual configuration of sensor addresses, as the sensors are self-addressing, ensuring easy implementation and maximum operational efficiency.

Control module for local monitoring

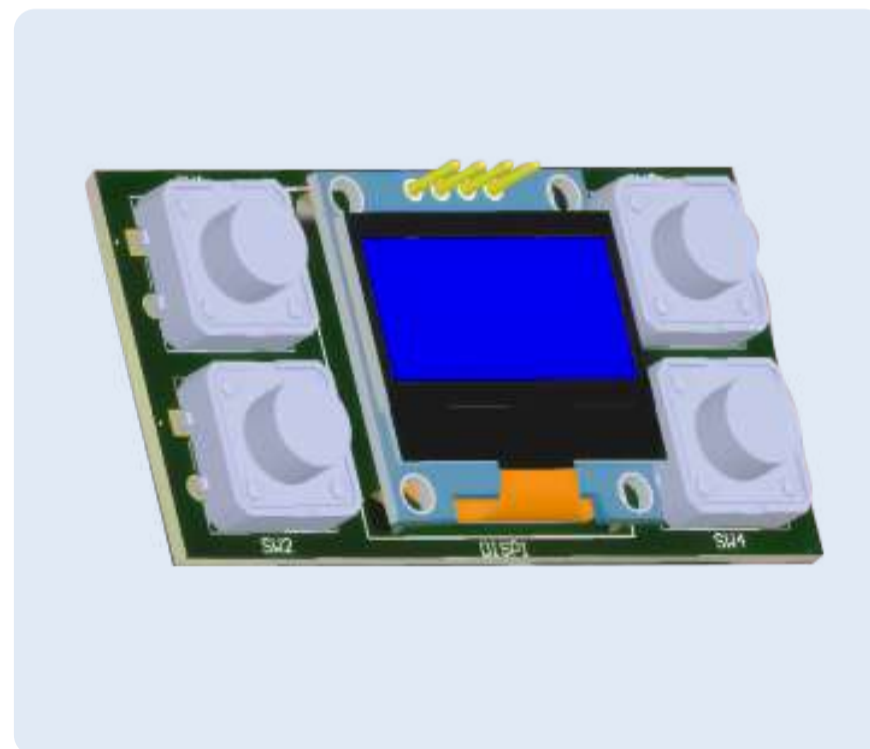
In addition to Modbus RTU or Ethernet communication, the system allows for direct local monitoring at the panel port, providing continuous readings and enabling the configuration of system parameters.

Display in panel button hole

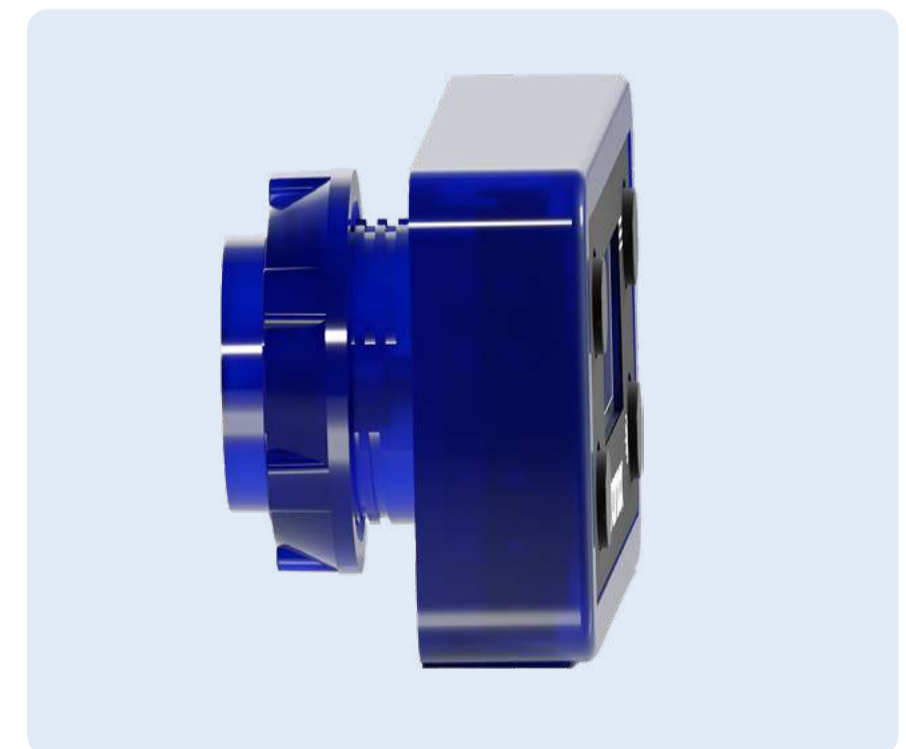
Installing the control module is extremely simple, requiring only a standard 22-mm-diameter hole. It connects to the gateway via a USB cable, with no tools required, ensuring a quick and easy setup.



Gateway/sensor and control module with display



Control board with display module



Control module with display (optional use)

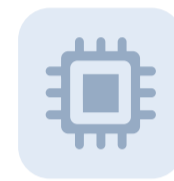
Reliability first

The ZYGGOT SG, Varixx's latest release, builds on the proven reliability of ZYGGOT systems, which already have thousands of units installed worldwide, ensuring operational efficiency and safety. Each component is rigorously selected, and all products are 100% factory-tested under real operating conditions, ensuring superior performance and quality.

State-of-the-art automated manufacturing



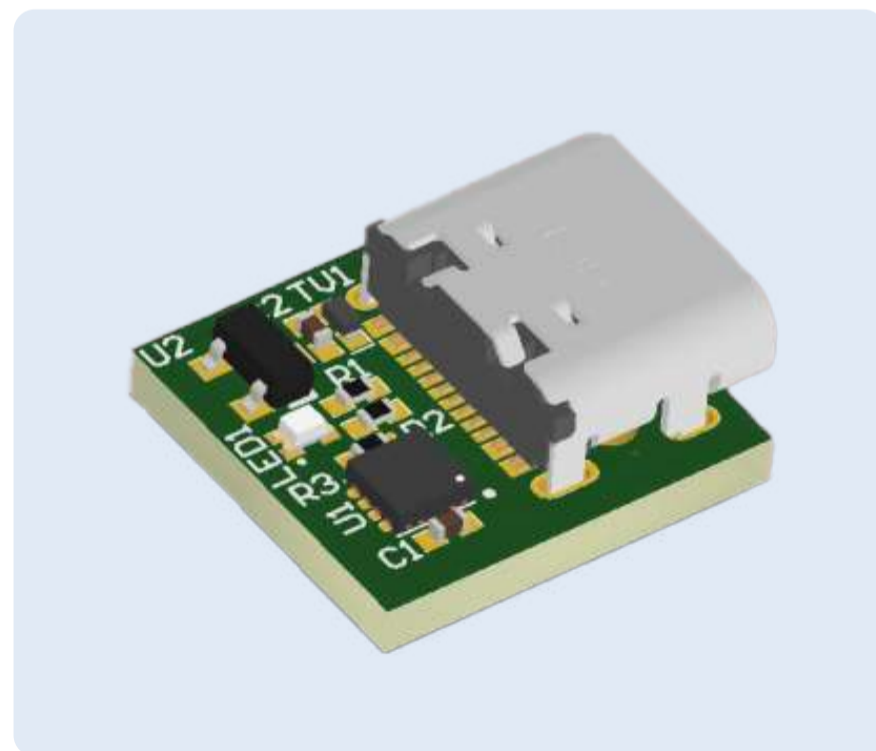
All system components are manufactured entirely at the Varixx manufacturing facility, with no outsourcing, ensuring maximum reliability and quality control.



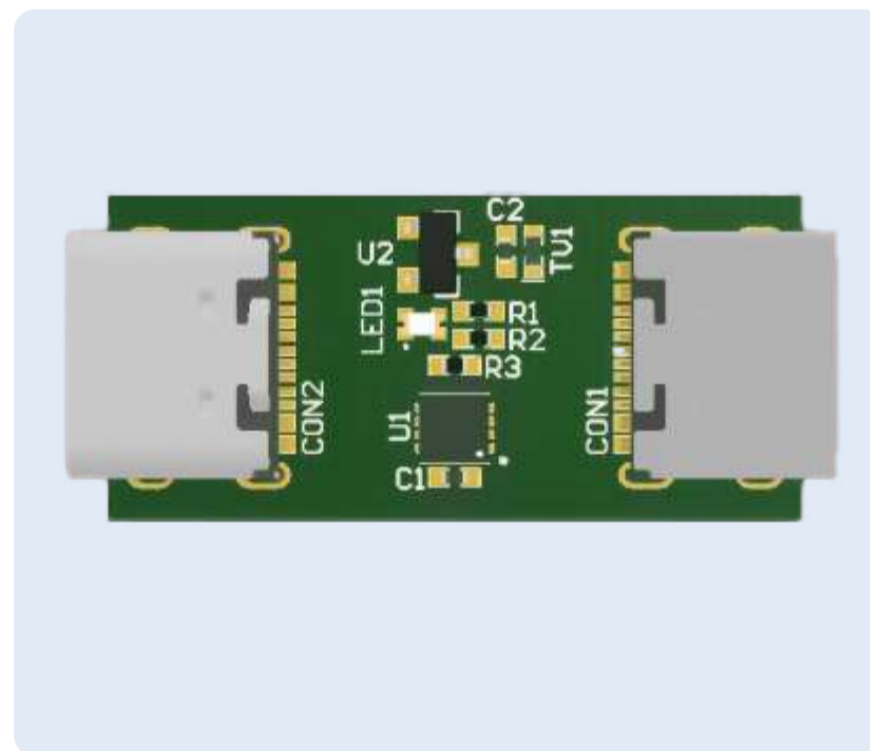
The production line features state-of-the-art pick-and-place machines equipped with linear motors and 1-micrometer precision, ensuring high-precision electronic assembly.



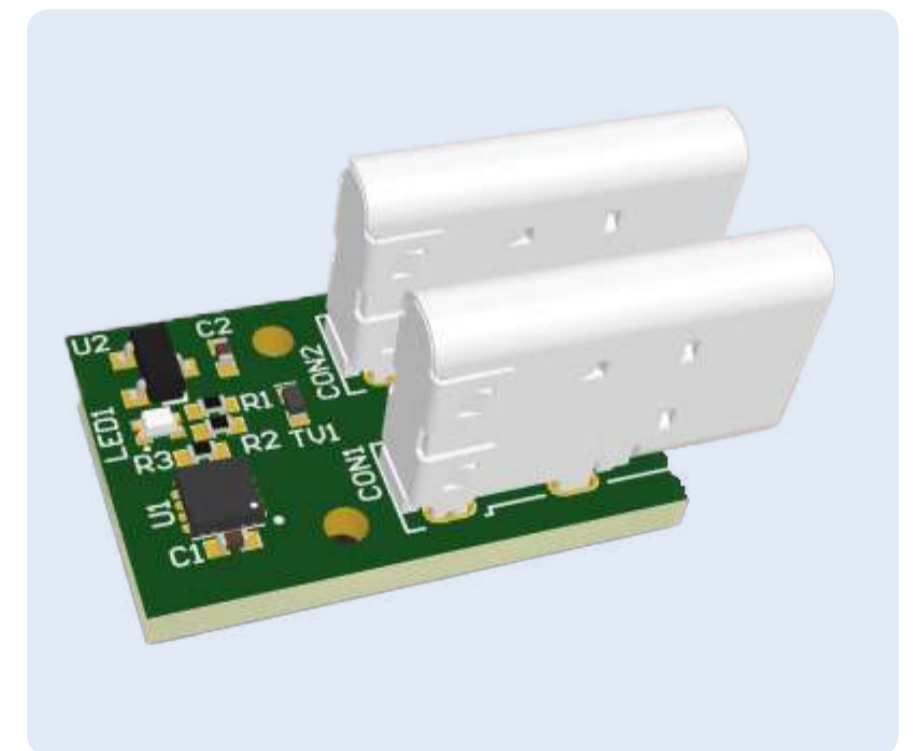
Even the plastic injection molds are developed entirely in-house using a 5-axis machining center with a precision of 0.1 micrometers, underscoring Varixx's commitment to innovation, quality, and absolute precision.



Smart single port sensor



Smart horizontal dual port sensor



Smart vertical dual port sensor

Complete ease of commissioning

The ZYGGOT SG system is designed for maximum ease of installation and commissioning, offering plug-and-play components, including cables with USB connectors, which eliminate the need for complex configurations and speed up deployment.

Status indicator LEDs

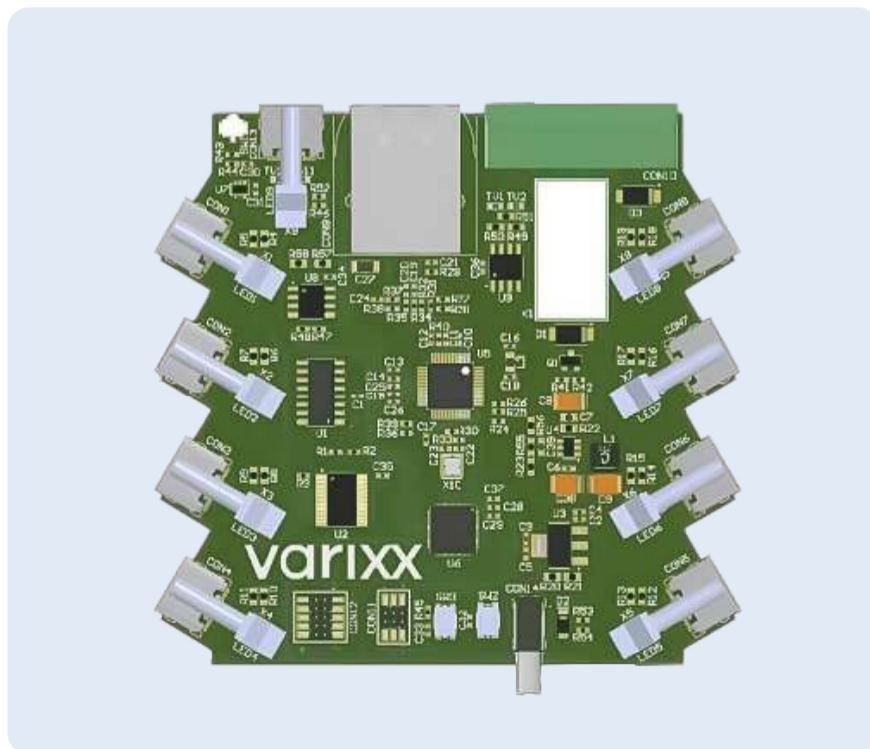
The gateway is equipped with RGB LEDs on all ports, which change color depending on operating conditions. Each sensor also has an indicator LED, allowing for quick identification of the system's status.

At the gateway:

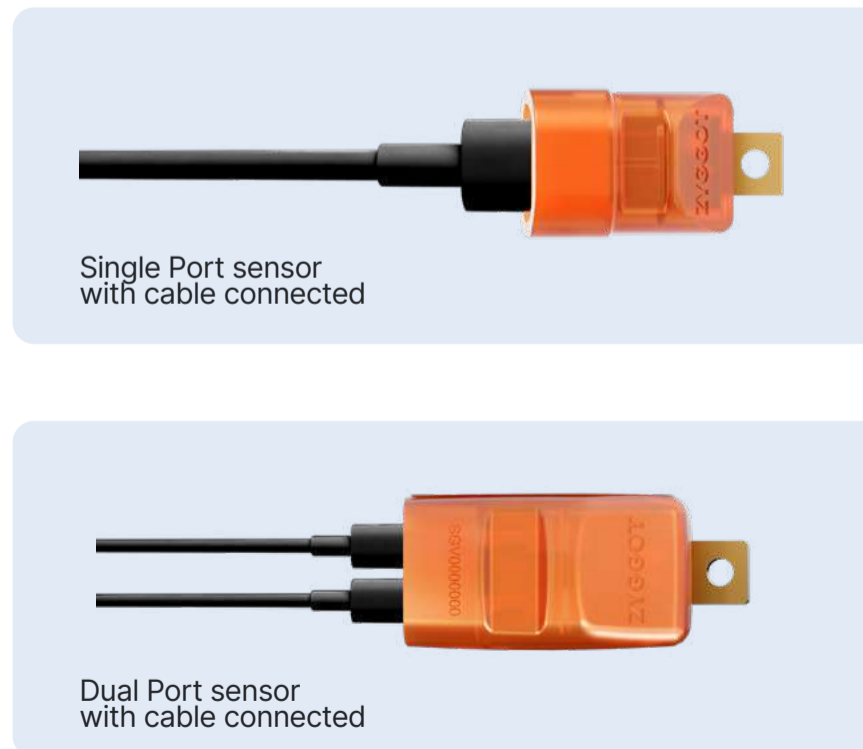
- Yellow: No active communication with sensors.
- Green: Normal communication with all sensors.
- Red: Indicates a fault or alarm.

In addition, the control module, installed on the panel door or in each drawer, also displays operating conditions, providing intuitive and efficient local monitoring.

GATEWAY ZYGGOT SG



SENSORS ZYGGOT SG



GATEWAY ZYGGOT SG



Two application possibilities

ZYGGOT SG system is available with three types of sensors:

- 1 single port model, ideal for use in CCM racks or Data Centers.
- 2 dual port models, which can be daisy-chained in series for use in more complex systems. The system supports up to 25 sensors per channel/port and up to 200 sensors per gateway when using the ZYGGOT SG relay. There is also the option of up to 80 gateways and 480 sensors when using the ZYGGOT SG relay.

System for CCMS drawers or Data Center

Below is an example of a complete system consisting of a gateway, a control module with a display, and 8 sensors. Installation is simple: just connect all the components using the cables provided. The gateway is mounted on a standard rail.



Dual port sensor allows for daisy-chaining

The same gateway can be used for both single port and dual port sensor systems. Below is an example of the front and rear views of the single port and vertical dual port sensors with Type-C mini USB connectors.



Application details

The ZYGGOT SG system can be installed in tight spaces and is easy to set up thanks to its plug-in cabling system. The optional control and programming module can be installed in a standard control button mounting hole (22 mm). The gateway can be installed inside the pull-out drawers.

System for CCMS drawers or Data Center

Complete system consisting of a gateway, a control module with a display, and 6 sensors. Installation is simple: just connect all the components using the supplied cables. The gateway is mounted on a standard rail.

Dual Port sensor allows for daisy-chaining

The same gateway can be used for both single port and dual port sensor systems. Below is an example of the control module with a display installed next to the buttons and indicator light on the door of the pull-out drawer.

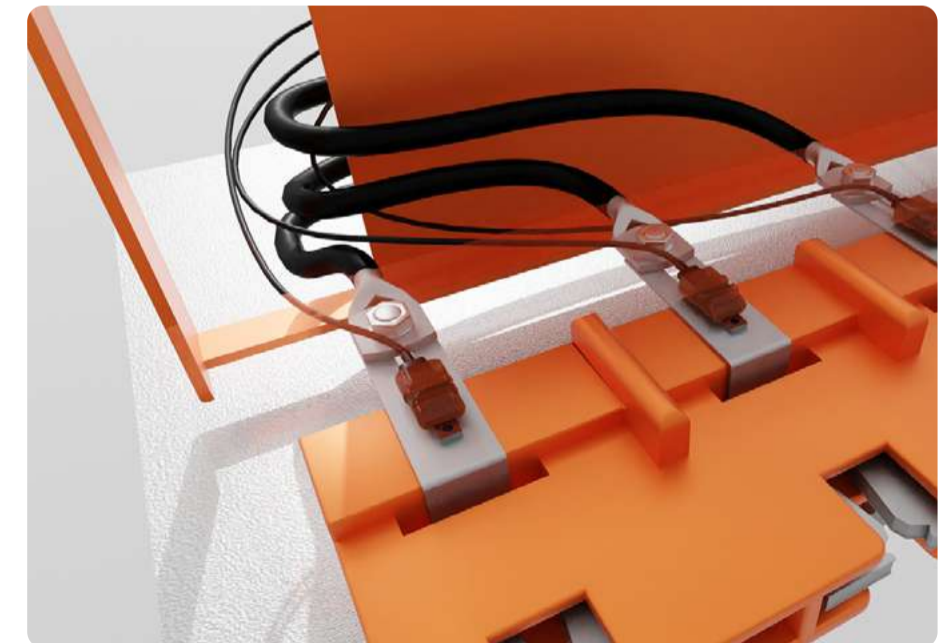
Application examples



Gateway



Control module with display



Sensors

Complete, compact and with Ethernet Communication

The ZYGGOT SG system is a compact and sophisticated solution equipped with a gateway featuring a 24 VDC power connector, RS-485 communication, and a dry contact output for alarms or tripping. With Ethernet communication, the system allows remote temperature readings from anywhere in the world, requiring only internet access and a web browser, PLC, or the user's SCADA system.

Next-generation gateway with Ethernet

The gateway's printed circuit board, shown below, features connection ports for sensors, terminals (TB) for RS-485 Modbus RTU communication, and dry relay contacts for signaling and alarms. Equipped with an ultra-fast microprocessor, the board also includes peripherals and operational status LEDs. Communication can be carried out via RS-485 or Ethernet, allowing integration with the user's SDCD system.

Circuit Board - Gateway



ZYGGOT SG - Remote Control



Remote Display

Real-time view of the local OLED display with live temperature readings and system status.

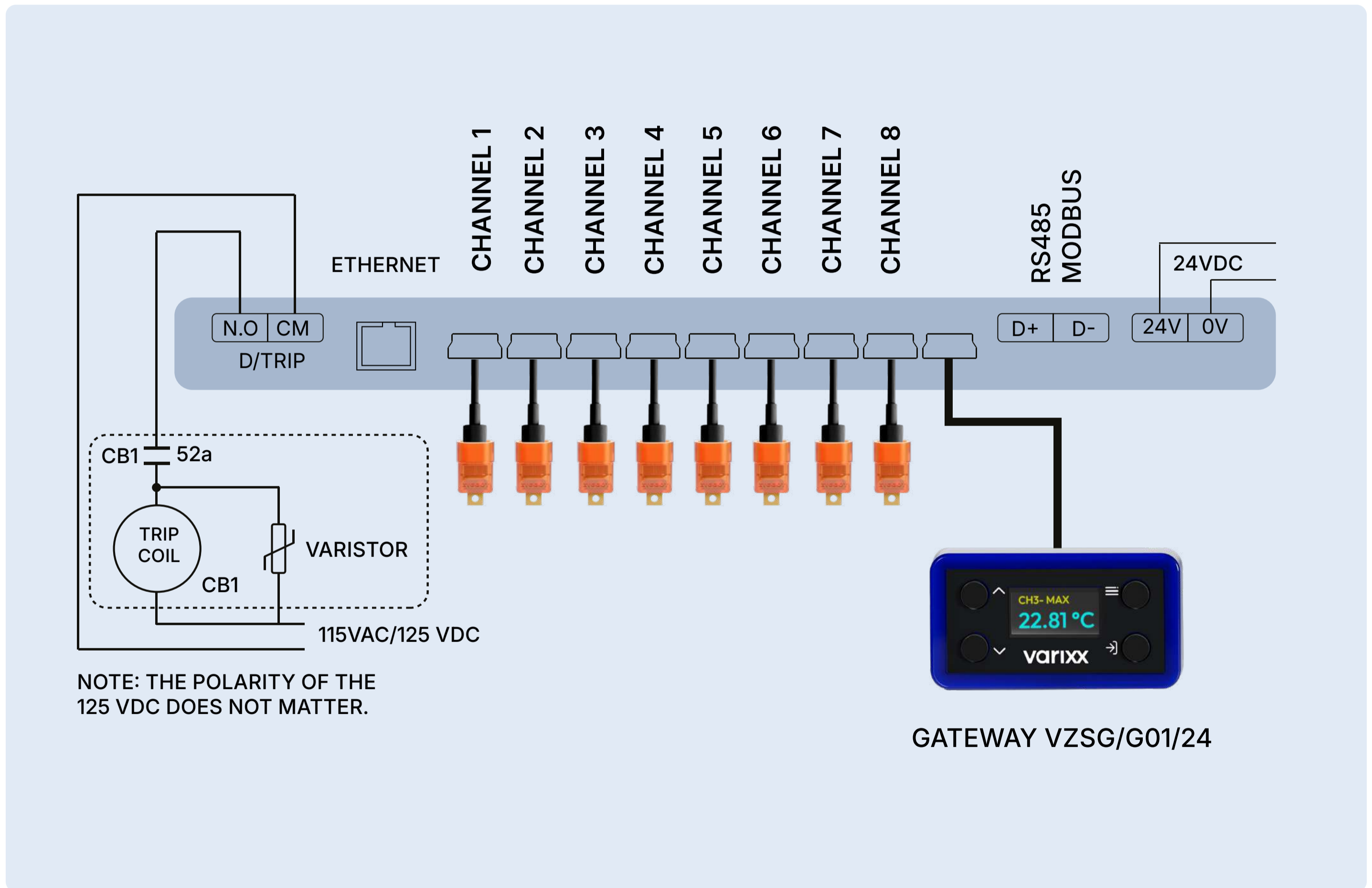
[View Display](#)

REMOTE CONTROL AND DATA READING BY ETHERNET

Screenshot of a browser connected to the SG via Ethernet using the web server running directly on the gateway. (zero programming)

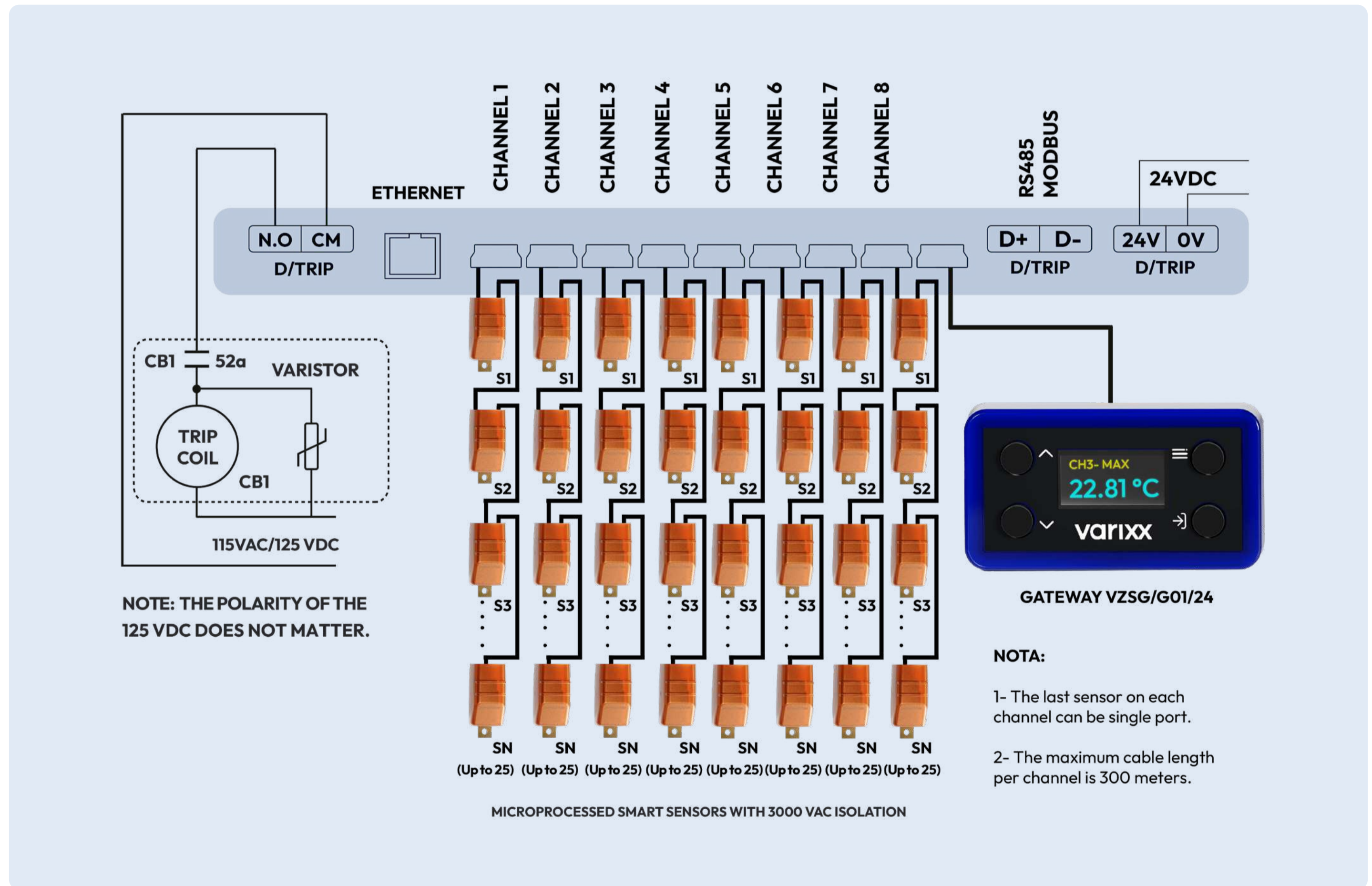
Example of a typical application in a CCM drawer or Data Center

System with Single Port sensors for installation inside pull-out drawers, with the control module mounted on the front of the drawer.



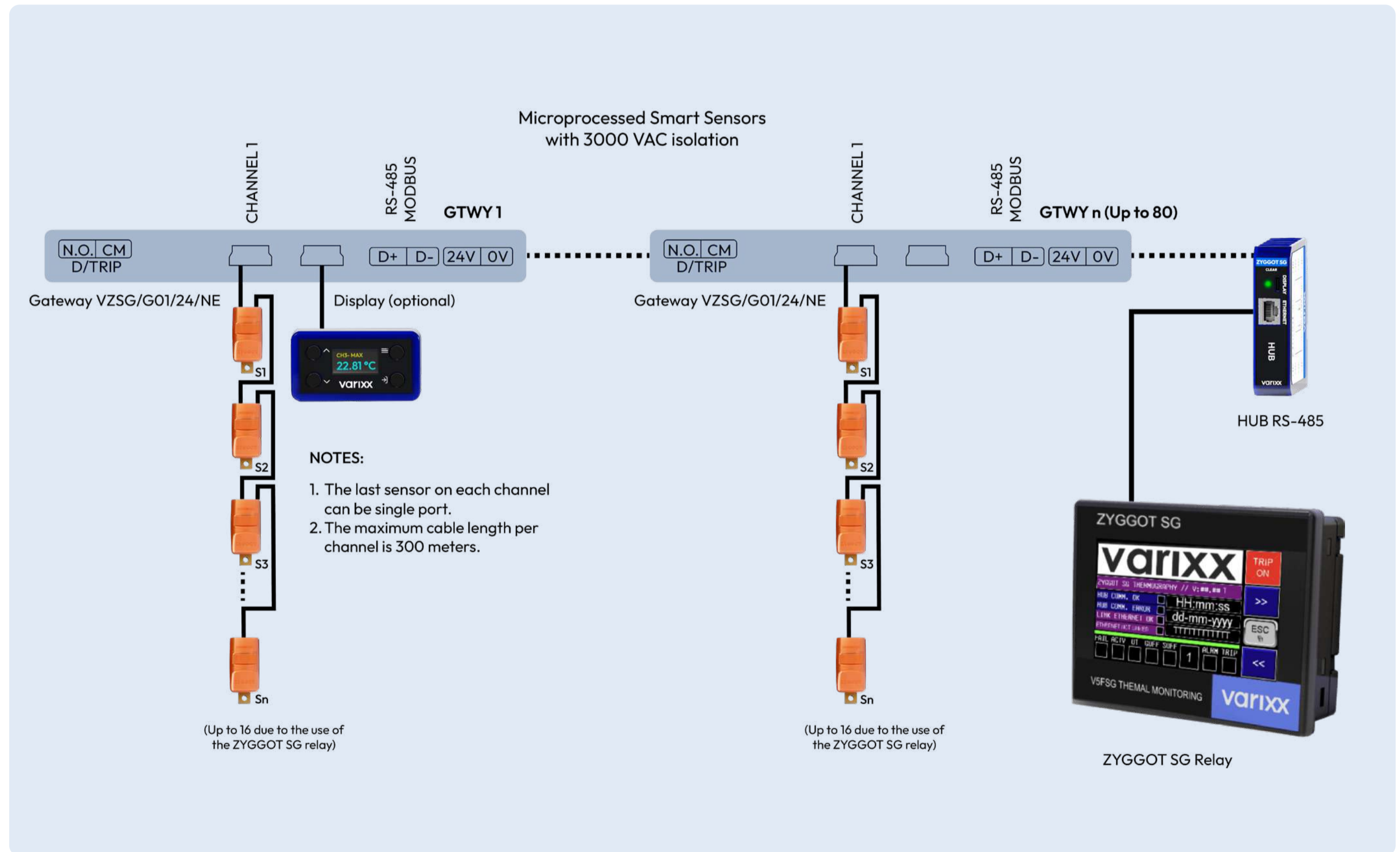
Example of a typical application in Switchgear, Busbar, or Pull-Out Drawers

Dual Port sensor system for installation in switchgear or shielded busways, with a control module mounted on the front of the panel.



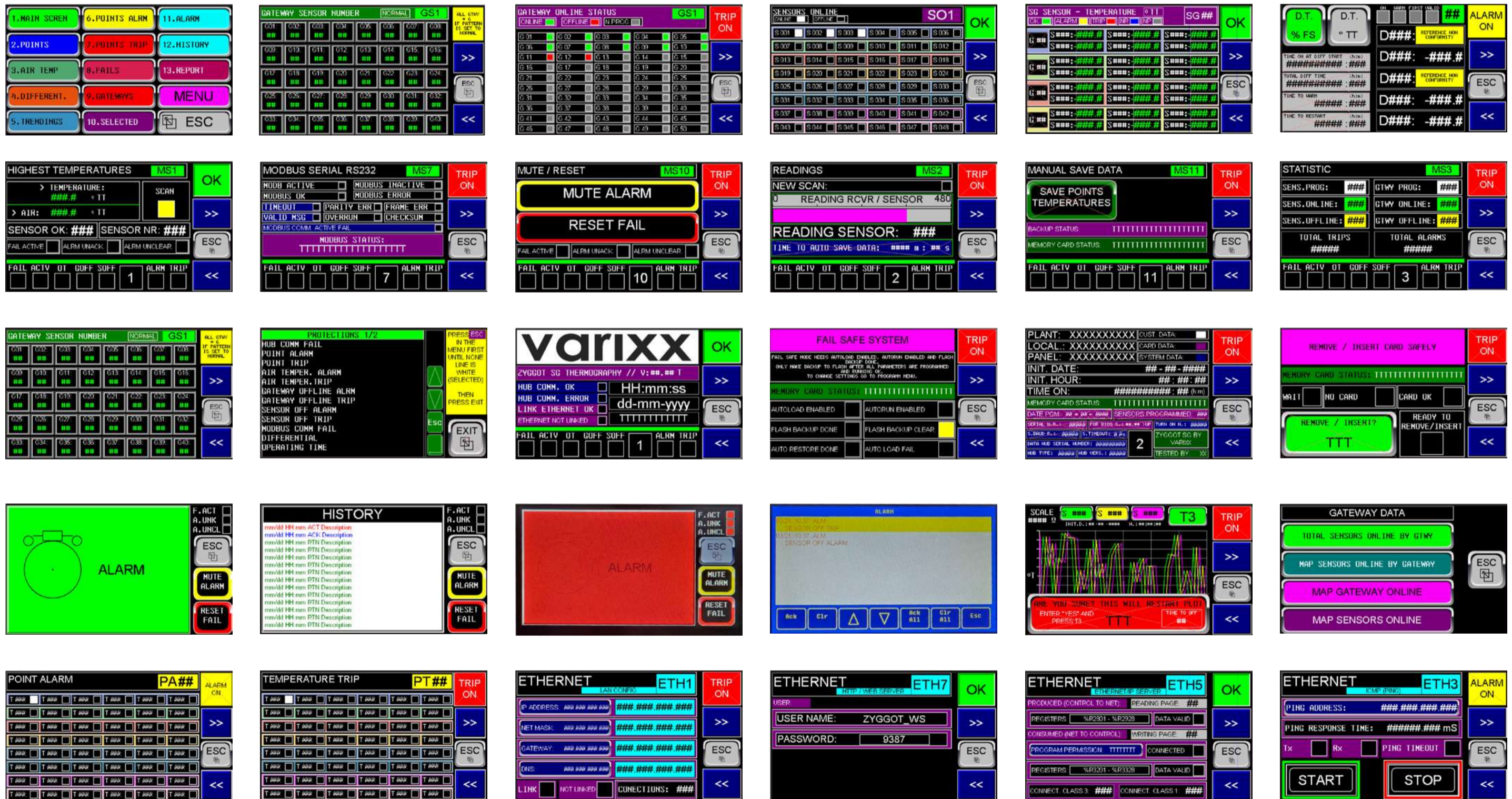
Example of a typical application using the ZYGGOT SG relay

System with ZYGGOT SG relay (optional), dual port sensors, and a control and programming module with display (optional). Only one unit is needed to program the gateways.



Hundreds of screens on the optional SG relay

The ZYGGOT SG relay system offers an important option for users who want the additional information and protection provided by a smart relay with a color display, thereby eliminating the need for multiple control modules with displays. The relay can monitor up to 80 gateways and up to 480 ZYGGOT SG sensors.



Ethernet-based programming and control software

After configuring the Ethernet communication parameters on the control module — whether using a static IP address or a dynamic IP address via DHCP — simply open a web browser and enter the address <http://xxx.xxx.xxx.xxx> to open this home screen. No programming is required (Zero Programming) to use all available features, such as Operation, Data Query, Modbus Documentation, MQTT Documentation, and APIs for integration with the user's SDCD systems (Embedding).

FULL REMOTE CONTROL via the Internet (Ethernet) and IoT (Internet of Things) using the MQTT (Message Queuing Telemetry Transport) protocol

Fully open APIs and documentation, accessible via a connected browser, enable full integration with the user's SDCD systems.

ZYGGOT SG Hub

Industrial Temperature Data Aggregator

System Configuration

Configure network settings, protocols, and backup/restore device configuration.

Open Configuration

SG Network

Live view of all remote SG Gateways with online status, sensor counts, and temperature readings.

View Network Monitor

Modbus Protocol

Complete Modbus RTU/TCP register map, connection parameters, and Implementation examples.

View Modbus Documentation

RESTful API

Access temperature data, sensor readings, and system configuration through REST endpoints.

View API Documentation

Firmware Update

Upload new firmware to the device. Use with caution - do not interrupt the update process.

Firmware Update

Simulator

Configure simulated SG Gateways: enable/disable SGs, set sensor counts, toggle individual sensors.

Simulator Config

PROFINET Protocol

Real-time Industrial Ethernet with cyclic I/O, acyclic records, process alarms, and diagnostics.

View PROFINET Documentation

EtherNet/IP Protocol

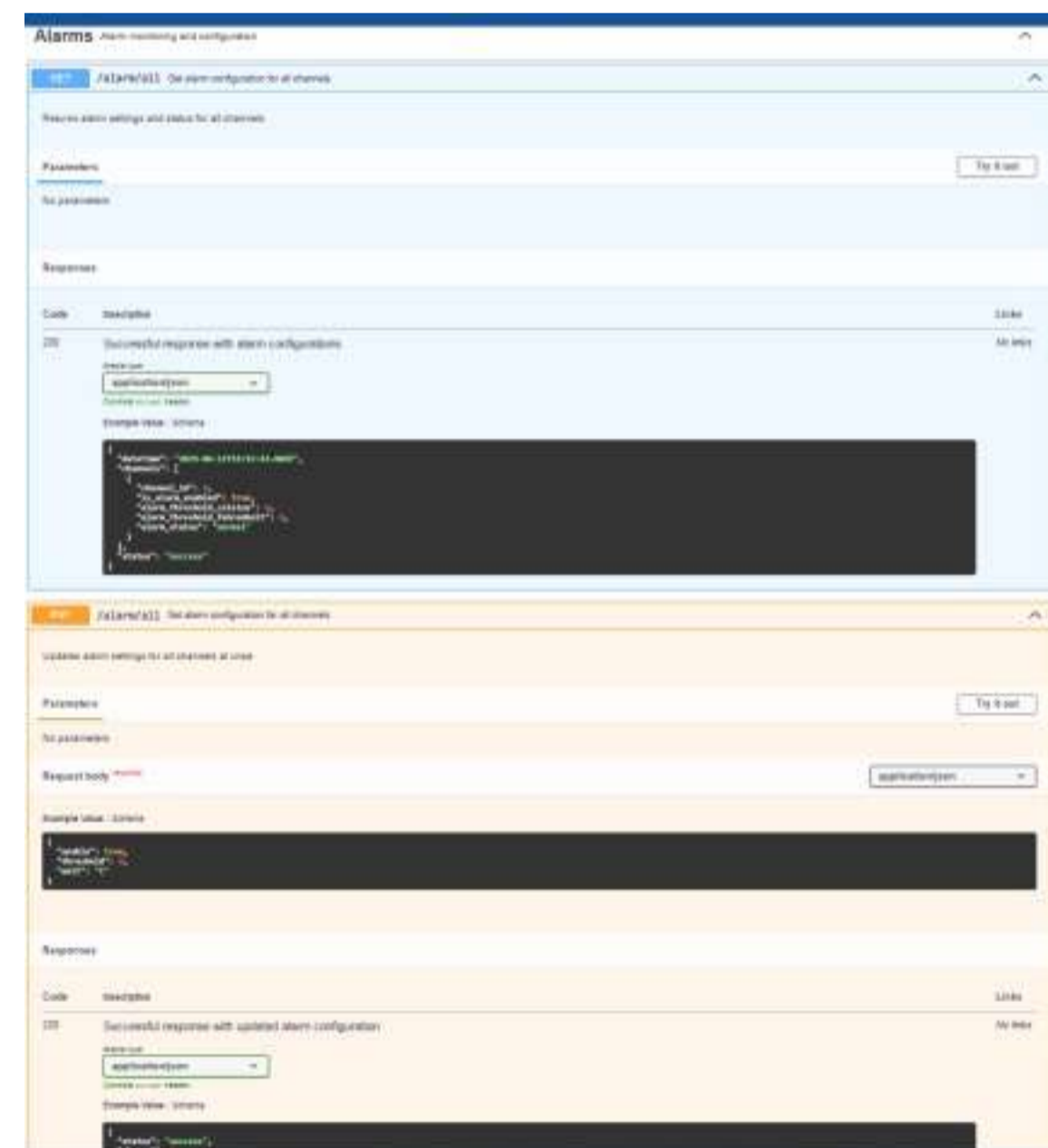
Industrial Ethernet CIP interface with assembly objects, PLC integration, and testing tools.

View EtherNet/IP Documentation

IEC 61850 Protocol

Substation automation standard with MMS server, standardized data models, and GOOSE messaging.

View IEC 61850 Documentation



Ethernet-based programming and control software

Simulator Configuration

Status: **ACTIVE** Turn Off Hold only 30" reboot restores production mode

Configured SGs: 80 / 80 Total Sensors: 480

SG 1 to 80 Enable 6 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 Apply

Save Configuration

SG#	Enable	Sensors	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
1	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

System Configuration

Network **PROTOCOLS** SG Gateways System

Serial Port 1 (Master)

Terminator 120Ω

Baud Rate: 19200

Parity: None

Stop Bits: 1

Serial Port 2 (Slave)

Terminator 120Ω

Baud Rate: 19200

Parity: None

Stop Bits: 1

Modbus (Slave)

RTU Address (1-254): 1

TCP Address (1-254): 1

MQTT

Enable:

Publish Interval: 5 sec

Secure Mode:

Broker URL:

Username:

System Configuration

Network **PROTOCOLS** SG Gateways System

Ethernet

DHCP:

Fixed IP: 192.168.1.100

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.1

Dynamic IP: 192.168.1.100

MAC Address: 72:04:10:17:2F:AC

DNS

Primary DNS: 192.168.1.1

Backup DNS: 0.0.0.0

Fallback DNS: 0.0.0.0

NTP

NTP Server:

From DHCP:

Keep On:

Ping Target

Ping IP: 0.0.0.0

Save Network

System Configuration

Network **PROTOCOLS** **SG Gateways** System

SG Gateways

Configured SGs: 80 / 80

Number of SDCs: Modbus start addr: Sensors: Apply

SG#	Modbus Addr	Sensors	IP Address
1	1	6	0.0.0.0
2	2	6	0.0.0.0
3	3	6	0.0.0.0
4	4	6	0.0.0.0
5	5	6	0.0.0.0
6	6	6	0.0.0.0
7	7	6	0.0.0.0
8	8	6	0.0.0.0
9	9	6	0.0.0.0
10	10	6	0.0.0.0
11	11	6	0.0.0.0
12	12	6	0.0.0.0
13	13	6	0.0.0.0
14	14	6	0.0.0.0

SG Network Monitor

Live status of remote SG Gateways

Configured: 80 SG Gateways

Online: 80 Connected

Total Sensors: 480 Across all SGs

SG	Sensors	S1	S2	S3	S4
SG 1	6	21.1°	21.2°	21.3°	21.4°
SG 2	6	22.1°	22.2°	22.3°	22.4°
SG 3	6	23.1°	23.2°	23.3°	23.4°
SG 4	6	24.1°	24.2°	24.3°	24.4°
SG 5	6	25.1°	25.2°	25.3°	25.4°
SG 6	6	26.1°	26.2°	26.3°	26.4°
SG 7	6	27.1°	27.2°	27.3°	27.4°
SG 8	6	28.1°	28.2°	28.3°	28.4°
SG 9	6	29.1°	29.2°	29.3°	29.4°
SG 10	6	30.1°	30.2°	30.3°	30.4°
SG 11	6	31.1°	31.2°	31.3°	31.4°
SG 12	6	32.1°	32.2°	32.3°	32.4°

System Configuration

Network **PROTOCOLS** SG Gateways **System**

Backup & Restore

Download Backup

No file chosen

Restore

Warning: Restoring will overwrite all settings. A device reboot is recommended after restore.

Ethernet-based programming and control software

Alarms Alarm monitoring and configuration

GET /alarms/all Get alarm configuration for all channels

Returns alarm settings and status for all channels

Parameters: No parameters Try it out

Responses:

Code	Description	Links
200	Successful response with alarm configurations	No links

Media tool: application/json

Example value: Schema

```

{
  "alarms": [
    {
      "channel": "TEMP_001",
      "description": "Temperature sensor 1",
      "enabled": true,
      "severity": "Warning",
      "timeout": 300,
      "type": "Temperature"
    },
    {
      "channel": "TEMP_002",
      "description": "Temperature sensor 2",
      "enabled": true,
      "severity": "Warning",
      "timeout": 300,
      "type": "Temperature"
    }
  ]
}
    
```

PUT /alarms/all Set alarm configuration for all channels

Updates alarm settings for all channels at once

Parameters: No parameters Try it out

Request body: application/json

Example value: Schema

```

{
  "alarms": [
    {
      "channel": "TEMP_001",
      "description": "Temperature sensor 1",
      "enabled": true,
      "severity": "Warning",
      "timeout": 300,
      "type": "Temperature"
    },
    {
      "channel": "TEMP_002",
      "description": "Temperature sensor 2",
      "enabled": true,
      "severity": "Warning",
      "timeout": 300,
      "type": "Temperature"
    }
  ]
}
    
```

Responses:

Code	Description	Links
200	Successful response with updated alarm configuration	No links

Media tool: application/json

Example value: Schema

Zygot SG Temperature Gateway API 4.0.0 ONAS 3.0

RESTful API for industrial temperature monitoring gateway with up to 8 channels and 50 sensors per channel

Users: Admin

Servers: Local API server

Channels Channel operations and sensor data

- GET /channels/all Get all channels data
- GET /channels/1 Get channel 1 sensor data
- GET /channels/2 Get channel 2 sensor data
- GET /channels/3 Get channel 3 sensor data
- GET /channels/4 Get channel 4 sensor data
- GET /channels/5 Get channel 5 sensor data
- GET /channels/6 Get channel 6 sensor data
- GET /channels/7 Get channel 7 sensor data
- GET /channels/8 Get channel 8 sensor data

Sensors Individual sensor operations

- GET /sensor/single-mode Get single mode sensor

Statistics Statistical data and analysis

- GET /channels/total Get sensor counts for all channels
- GET /channels/avg Get maximum temperature
- GET /channels/min Get minimum temperature
- GET /global/stats Get global statistics

Alarms Alarm monitoring and configuration

- GET /alarms/all Get alarm configuration for all channels
- PUT /alarms/all Set alarm configuration for all channels
- GET /alarms/1 Get alarm configuration for channel 1

PROFINET Protocol
Industrial Real Time Ethernet Communication

Overview

The Zygot SG Hub implements PROFINET I/O-Device functionality, enabling seamless integration with PROFINET I/O-Controllers such as Siemens ET-1000 I/O-Port and CODESYS-based PLCs. The implementation covers the protocol stack (RT Class, v1.5) and supports Configuration Class 2 with about 3 ms I/O cycle times.

Key Features:

- PROFINET I/O-Device, Configuration Class A (v1.5)
- 80 assignable I/O modules (per an external SG Gateway)
- Cyclic data exchange with configurable update rates
- Active real-time mode for configuration and diagnostics
- Priority classes for temperature and maintenance records
- Standardized IEC 61850-4 identification and maintenance records
- SCP Recovery and configuration protocol

Current Configuration

IPADDR: 192.168.1.100
SUBNET: zygot-hub-000
Vendor ID: 0x0018 (18011)
Device ID: 0x0002
Protocol Name: Zygot-30-Plus
Configuration Class: A (Real-Time)

CODESYS / TIA Portal Setup

Step 1: Import CODESYS File

Download the CODESYS file from the button below and import it into your engineering tool:

- TIA Portal: Online -> Manage general object descriptions (GSD) -> Import
- CODESYS: Tools -> Device Repository -> Install -> Select CODESYS file

Step 2: Add Device to Project

EtherNet/IP Protocol
Industrial Ethernet CIP Communication Interface

Overview

The Zygot SG Temperature Gateway implements EtherNet/IP, an industrial Ethernet protocol based on CIP (Common Industrial Protocol). This enables seamless integration with industrial automation systems from major vendors like Rockwell Automation, Schneider Electric, and others.

Key Features:

- CIP Identity Object for device identification
- Assembly Objects for efficient I/O data exchange
- Real-time temperature data access via Class 1 connections
- TCP port 44818 for explicit messaging
- UDP port 2222 for implicit I/O messaging
- Compatible with major PLC vendors

Current Configuration

Status: Disabled
Vendor ID: 0x0018
Device Type: 0x0C (Communications Adapter)

IEC 61850 Protocol
Substation Automation System Communication Standard

Overview

The Zygot SG Temperature Gateway implements IEC 61850, the international standard for electrical substation automation. This protocol provides standardized models for power system data and enables interoperability between intelligent electronic devices (IEDs) from different manufacturers.

Key Features:

- MMS (Manufacturing Message Specification) server on port 102
- GOOSE publisher for critical event messaging (planned)
- Standardized data model for temperature measurements
- Self-describing device with SCL (ICD file) support
- Real-time data access with Report Control Blocks
- Compatible with IEC 61850 clients (OpenMUC, IEDScout, etc.)

Current Configuration

Status: Disabled
IED Name: TEMP_SG_000
MMS Port: 102 (standard IEC 61850 port)
Access Point: 51

Zygot SG Hub API 4.0.0 ONAS 3.0

RESTful API for the SG Hub (Concentrator) - aggregates temperature data from up to 20 remote SG Gateway devices via Modbus RTU

Servers: API - API base path

Status System overview and temperature data

- GET /status System status
- GET /temperatures All temperatures

SG Gateways Remote SG Gateway configuration and data

- GET /sg List SG gateways
- GET /sg/{id} Get SG gateway
- POST /sg/{id} Configure SG gateway

Hub Hub polling settings

- GET /hub Get hub settings
- POST /hub Set hub settings

varixx

Dozens of accessible screens and menus

MENU	Description	View - 0	Edit - 1	Admin - 2
MENU	Main Menu	X	X	X
SAVE	Save Data		X	X
1. STATUS	Status	X	X	X
2. CHANNEL	Channel	X	X	X
2.1 TOTAL	Channel Total	X	X	X
2.2 OFFLINE	Channel Offline	X	X	X
2.3 INDEX	Channel Index		X	X
2.4 FIND	Channel Find	X	X	X
2.5 CLEAR	Channel Clear		X	X
2.6 INFO	Channel Info	X	X	X
3. ALARM	Alarm	X	X	X
3.1 STATUS	Alarm Status	X	X	X
3.2 OVER TEMP	Alarm Over Temperature	X	X	X
3.3 UNDER TEMP	Alarm Under Temperature	X	X	X
3.4 SETUP	Alarm Setup		X	X
3.4.1 ALL	Alarm Setup All Channel		X	X
3.4.2 CHAN.	Alarm Setup By Channel		X	X
3.5 OUTPUT	Alarm Output		X	X
4. SCREEN	Screen		X	X
4.1 LOCALE	Screen Locale		X	X
4.2 CLOCK	Screen Clock		X	X
4.2.1 ADJUST	Screen Clock Adjust		X	X
4.3 DELAY	Screen Delay		X	X
4.4 TIMEOUT	Screen Timeout		X	X
4.6 SHOW 1	Screen Show 1		X	X
4.7 SHOW 2	Screen Show 2		X	X
4.8 TEST	Screen Test		X	X
5. PROTOCOL	Protocol			X
5.1 MODBUS	Protocol Modbus			X
5.2 API WEB	Protocol Restful - API			X
5.3 MQTT IOT	Protocol Mqtt - IOT			X
5.3.1 BROKER	Protocol Mqtt Broker			X
5.3.2 LOGIN	Protocol Mqtt Login			X
6. ETHERNET	Ethernet			X
6.1 E STATUS	Ethernet Status			X
6.2 AUTO	Ethernet Auto			X
6.3 STATIC	Ethernet Static			X
6.3.1 ADDRESS	Ethernet Static Address			X
6.3.2 GATEWY	Ethernet Static Gateway			X
6.3.2 MASK	Ethernet Static Mask			X
6.4 DNS	Ethernet Dns			X
6.4 DNS BKP	Ethernet Dns Backup			X
6.4 DNS MAIN	Ethernet Dns Main			X
6.5 NTP TIME	Ethernet Ntp			X
6.5.1 NTP SV	Ethernet Ntp Server			X
6.6 PING	Ethernet Ping			X
6.6.1 RESULT	Ethernet Ping Result			X
7. SERIAL	Serial RS485			X
8. LOGIN	Login		X	X
9. PASSWORD	Password		X	X
0. ABOUT	About	X	X	X

Some system screens



ZYGGOT SG System Features

Applications and General Features

- Suitable for low-voltage applications, up to 800 VAC (tested at 2x rated voltage +1 kV).
- Suitable for use in switchgear cabinets.
- Suitable for use in data center systems with removable cabinets.
- Suitable for busbar monitoring (shielded busbars).
- Sensors powered by the One-Wire network itself.
- A single 24 VDC power source powers the entire system.
- Up to 400 sensors per gateway in the dual port sensor version.
- Up to 8 sensors per gateway in the single port sensor version.
- No batteries required. Low power consumption.
- Continuous, automatic temperature readings from each sensor.
- Self-addressing - each sensor is automatically detected and addressed.
- Polycarbonate sensors designed for high temperatures (up to 150 °C).
- Chained sensors: if one fails, the others continue to operate.
- Very low purchase and installation costs.
- Full remote control via Ethernet with zero programming required.

Communication

- Modbus RTU Communication (RS-485).
- Ethernet Communication (RJ-45).

Temperature Range

- Measurement range: -55°C to 150 °C
- Maximum sensor temperature: 150 °C
- Gateway ambient temperature: -30 °C to 105 °C

Programming

- Easily programmable via the drawer's control module, the panel port, or remote operation over Ethernet.
- Full programming capabilities, including alarm levels, communication parameters, etc.

Resolution and Accuracy

- Resolution: 0,01 °C
- Accuracy better than 0,2% of the measured value of +10 °C to +45 °C.
- Accuracy better than 0,3% of the measured value of -40 °C to +105 °C.
- Accuracy better than 0,4% of the measured value of -55 °C to +150 °C.

Interconnecting Cables

- Interconnect cables are available in lengths ranging from 20 cm to 8 meters.
- Cables feature USB-C connectors on both ends and are ready to use.
- Maximum network length per channel: up to 300 meters for dual port sensors.

Types of Sensors

- One-Wire Single Port sensor for use with up to 8 sensors per gateway.
- One-Wire Dual Port sensor with vertical connectors. For systems with up to 400 daisy-chained sensors, 50 per channel.
- One-Wire Dual Port sensor with horizontal connectors. For systems with up to 400 daisy-chained sensors, 50 per channel.

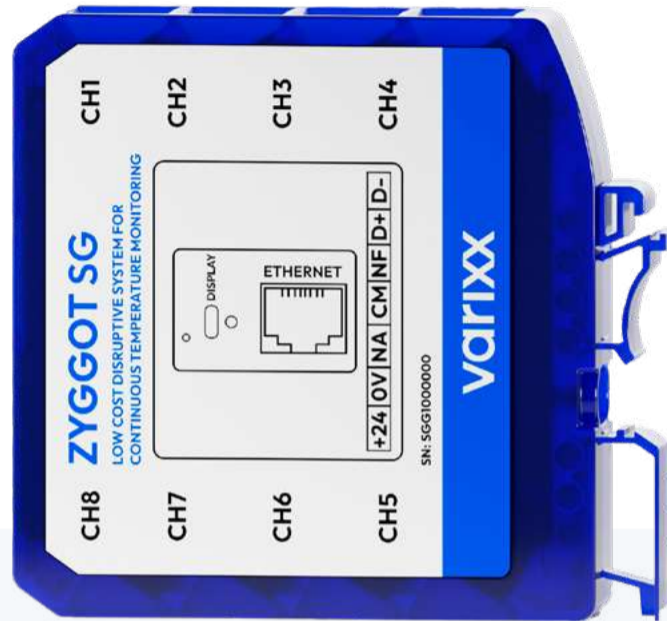
Codes

- Gateway: VZSG/G01/24
- Hub for interfacing with the relay: HUB RS-485 (optional use)
- ZYGGOT SG Relay: V5SG (optional use)
- Single Port Sensor: VZSG/S01/24
- Vertical Dual Port Sensor: VZSG/S02/24
- Horizontal Dual Port Sensor: VZSG/S03/24
- Control Module with Display: VZSG/M01/24 (optional use)
- 6A/ 24 VDC Power Supply: VPS6024
- 12A/ 24 VDC Power Supply: VPS12024

Gateway Outputs

- 1 Output: 5A / 250 VAC or 5A / 30 VDC. (dry contact).

MULTIPORT GATEWAY VZSG/G01/24



Communication:	Modbus RTU and Ethernet
Output:	1 dry contact alarm 5A/250VAC
Sensors:	8 or up to 400 per Gateway
Power Supply:	24 VDC (5 to 30 VDC)
Consumption without Display:	73 mA
Consumption with Display:	81 mA
Measurement Range:	-55 °C to +150 °C
Ambient Temperature:	-30°C to +125°C
Dimensions:	22L x 91A x 98P mm
Material:	ABS

a) Please note that the multiport gateway can be programmed using the SG software to simulate up to 8 gateways for use with the ZYGGOT relay (1 per channel); this allows you to use a minimum of 10 gateways, either on their own or in combination with single-port gateways for use with the relay, and up to 480 sensors.

SINGLE PORT GATEWAY VZSG/G01/24/NE



Communication:	Modbus RTU
Output:	1 dry contact alarm 5A/250VAC
Sensors:	Up to 16 sensors per Gateway
Power Supply:	24 VDC (5 to 30 VDC)
Consumption without Display:	73 mA
Consumption with Display:	81 mA
Measurement Range:	-55 °C to +150 °C
Ambient Temperature:	-30°C to +125°C
Dimensions:	22L x 91A x 98P mm
Material:	ABS

b) Please note that the low-cost single-port gateway, designed primarily for internal use in CCM enclosures, unlike the multi-port gateway, does not have an Ethernet port; it only supports Modbus RTU for connection to the ZYGGOT SG relay, which features an RS-485 port with Ethernet.

ZYGGOT SG SENSORS VZSG/S0X/24 - VZSG/D0X/24



Communication:	One Wire Network
Ports:	1 or 2 depending on the model
Number of Sensors:	8 or up to 400 per Gateway
Power over Network:	24 VDC (5 to 30 VDC)
Consumption with LED off:	250 uA
Consumption with LED on:	5 mA
Measurement Range:	-55 °C to +150 °C
Maximum Temperature:	+150°C
VZSG/S01/24 Dimensions:	18L x 12A x 33C mm
VZSG/S02/24 Dimensions:	17L x 18A x 38C mm
VZSG/S03/24 Dimensions:	30L x 12A x 55C mm
Material:	Polycarbonate

CONTROL MODULE VZSG/M01/24



Communication:	Rede RS-485
Display:	Color LCD
Buttons:	4 for operation and programming
Power over Network:	24 VDC (5 to 30 VDC)
Consumption:	8 mA
Measurement Range:	-55 °C to +150 °C
Ambient Temperature:	-40°C to +80°C
Dimensions:	66L x 37A x 13P mm
Material:	ABS

ZYGGOT SG V5SG RELAY



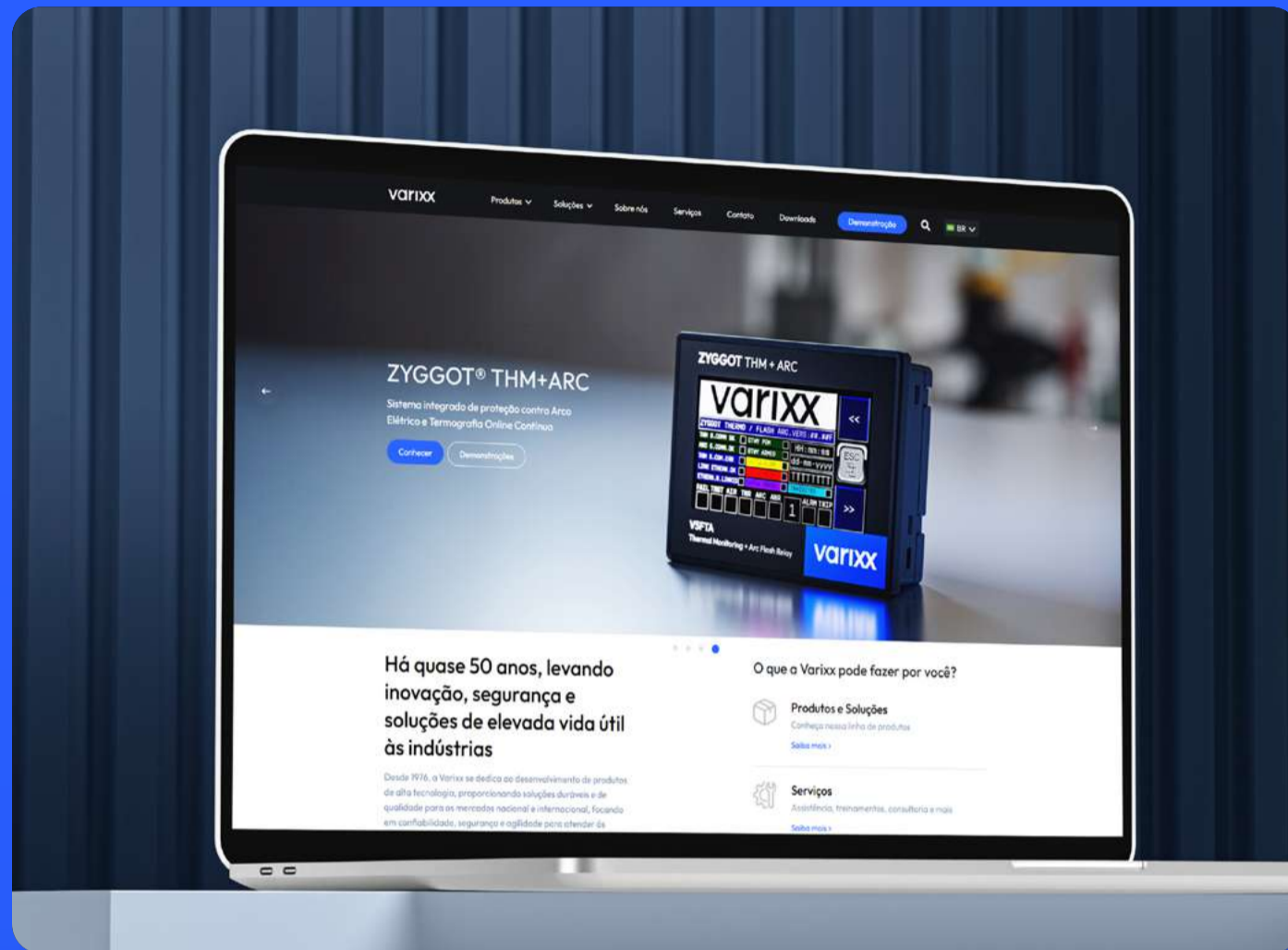
Power Supply:	24 VDC
Humidity:	5 to 95%
Number of Sensors:	Up to 100 sensors
Resolution:	1 °C
Inputs:	4 analogs 4 digitals (12 to 24 VDC)
Outputs:	2 Alarm and Trip outputs (N.O.) 2 programmable outputs (N.O.) 1 output for connecting sensors
Communication:	Modbus RTU Devicenet (opcional) Ethernet TCP-IP (opcional)
Screen:	Colorful, touch screen WVGA

CONTROL MODULE VZSG/M01/24



Communication:	Mosbus RTU and Ethernet
Power Supply:	24 VDC Nominal (5 to 30 VDC)
Consumption:	50 mA
Ambient Temperature:	-30 °C to +125 °C
Dimensions:	22L x 91A x 98P mm
Material:	ABS

c) The ZYGGOT SG online software allows you to configure the RS-485 HUB to simulate up to 80 gateways and up to 480 sensors. Using the program, which works with any browser, you can simulate sensors and gateways both online and offline, allowing you to view the operation of the ZYGGOT SG relay. It is useful for training, for example.



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Since 1976, Varixx has been dedicated to developing high-tech products. Its expertise in power electronics has consistently enabled the company to offer a wide range of products that have become known for their innovation, long service life, and quality.

As the holder of numerous technology patents, Varixx is committed to introducing functional and intelligent concepts to the domestic market and around the world.

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