SUNSPEC ALLIANCE | KNX | HMS

Connecting DERs and Smart Buildings:

Seamless SunSpec Modbus-to-KNX Integration

WEBINAR



THURSDAY

NOVEMBER 12, 2026

9:00 AM PST

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SPEAKER

Jesús Arias

Membership & Business Development Lead
KNX Association

KNX

Jesús has worked in home and building automation since 2007. His career covers the full KNX value chain: device development with the manufacturer Zennio, system integration, and technical training delivered across Asia, Africa and South America. He has also published on KNX and LEED. This experience gives him a broad view of the challenges manufacturers, integrators and end users face.

Today he is Membership & Business Development Lead at KNX Association. He helps manufacturers and solution providers make full use of the KNX ecosystem, including the new KNX IPv6 extension that brings KNX to Ethernet, Wi-Fi and Thread. He also leads the KNX Working Group Applications, which currently focuses on energy management. In this role, he coordinates the development of new specifications and related marketing activities. The goal is to position KNX as a key enabler in meeting today's energy challenges, from grid stability to rising energy prices.

2014: one inverter, one hard limit

A high-end home. KNX was already running the lighting, HVAC, water, shading… Solar panels and battery storage on site, and one inverter, speaking Modbus.

14 kW

The cap the customer wanted on peak power drawn from the municipal supply



WHAT IT TOOK

1. Read the inverter manual, cover to cover
2. Work out which Modbus registers mattered, and what their scaling meant
3. Configure the Modbus to KNX gateway by hand, register by register
4. Test, correct, repeat

The result worked. None of it was reusable. I wanted something off the shelf, on a coherent data model. That is how I came across SunSpec.

KNX is more than the green cable

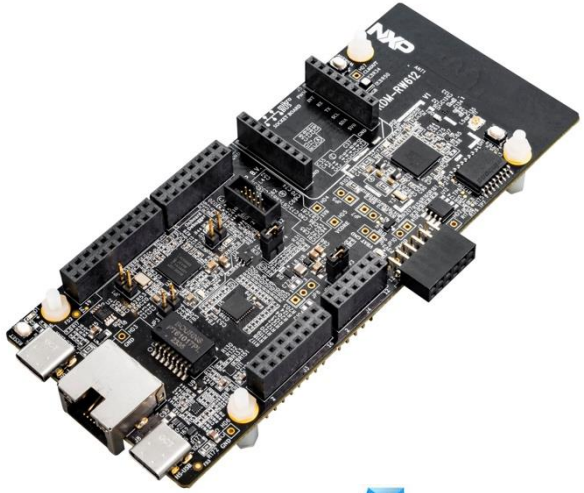
For many, KNX is the twisted pair cable. That is still true. It is no longer the whole identity.

WHAT HAS NOT CHANGED

- ISO/IEC 14543-3-11, vendor independent by design
- Interoperability guaranteed at application level
- KNX TP / KNX RF / KNX IPv4 / KNX IPv6 **(KNX IoT)**
- No central hub, no single point of failure
- One engineering tool for every device: ETS
- 500+ manufacturers, one certification regime

WHAT KNX IoT ADDS

- Native IP communication over IPv6
- Secure by design: OSCORE (RFC 8613) end to end
- Open source stack, portable to any IPv6 platform

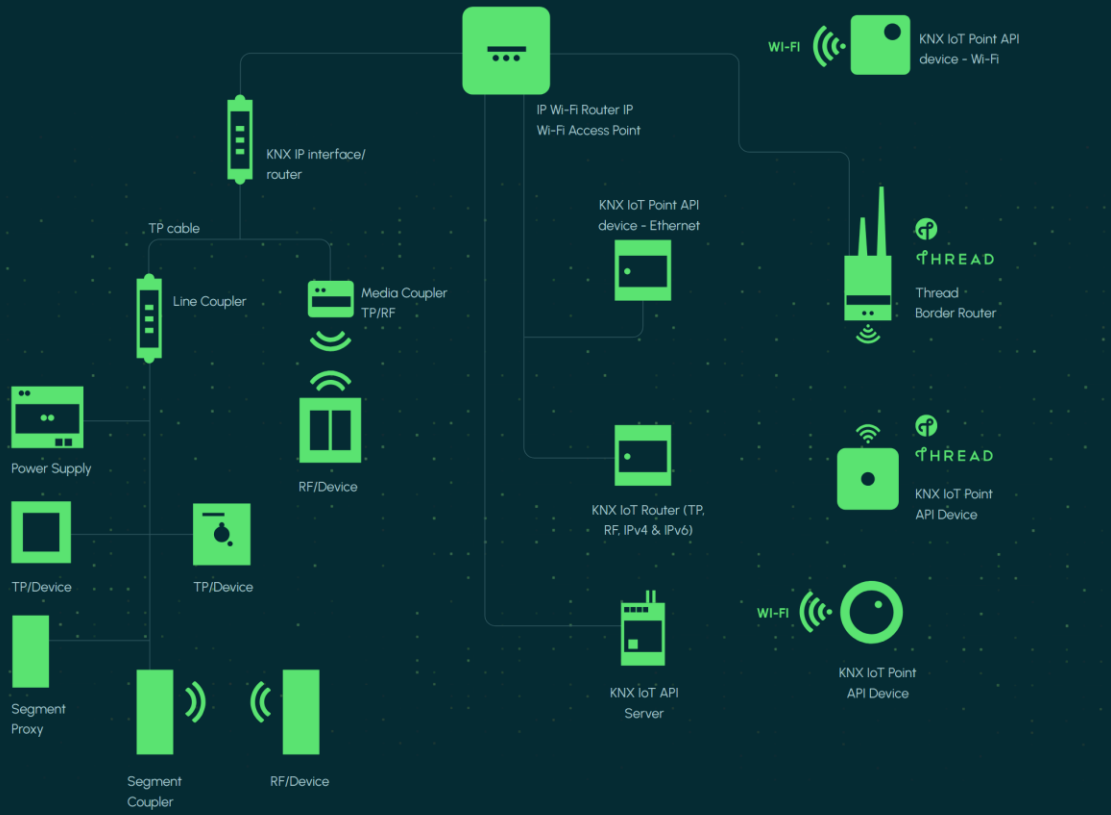


Zephyr

THE LINUX FOUNDATION

Explore the Technologies Behind KNX

Behind every KNX system is a powerful foundation of technologies that connect ideas to innovation. Whether you're developing wired, wireless, or IoT-based devices, KNX provides the robust framework and certification ecosystem you need to bring your smart building products to life—securely and at scale.



Join us

www.knx.org

The business opportunity

~500 million

KNX devices installed worldwide

Estimate done in 2025

140,000+

KNX certified installers

New Energy Management course rolling out

500+

Manufacturers in the ecosystem

One certification, one interoperability promise

THE PAIRING

- SunSpec: a common, multi-vendor data model for DERs
- KNX: the loads, the installed base and the toolchain
- Mapped, documented and already implemented

Every one of those buildings is a site where an inverter can be installed and start orchestrating real loads from day one. That is what makes SunSpec and KNX a natural pairing.



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SPEAKER

Pau Ollé Jiménez

Product Manager Protocol Converter gateways,
Intesis | HMS Networks

HMS

Product Manager at Intesis, an HMS Networks brand, specializing in industrial and building automation communication solutions. With a background in Industrial Engineering and expertise in protocol gateways, building automation, and system integration.

Focused on product development and strategy, market-driven innovation, and enabling seamless communication between HVAC, lighting, energy management, and building automation systems to support smarter, more connected, and energy-efficient buildings.

Seamless SunSpec Modbus to KNX TP integration

SunSpec – KNX – HMS Webinar

Intesis Product Management

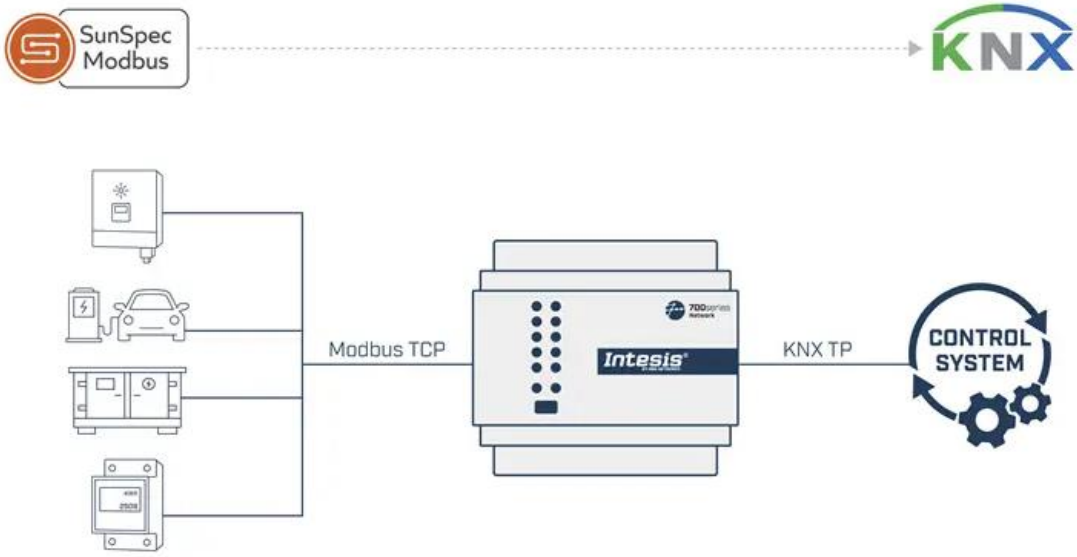
12 November 2026



Integration Concept

Modbus TCP & RTU Master to KNX TP Application

Item number IN701KNX1000000



DERs and associated energy devices



IN701KNX1000000

- Protocol bridging
- Standardized data mapping
- Monitoring and control
- Energy management integration

SunSpec driver: How it works



TCP/IP Scan

01.

Gateway scans the Modbus TCP network to auto-discover SunSpec devices

TLS encryption

02.

Secure mTLS channel established between gateway and DER

Model ID Read

03.

SunSpec Model ID register maps discovery and populate

KNX mapping

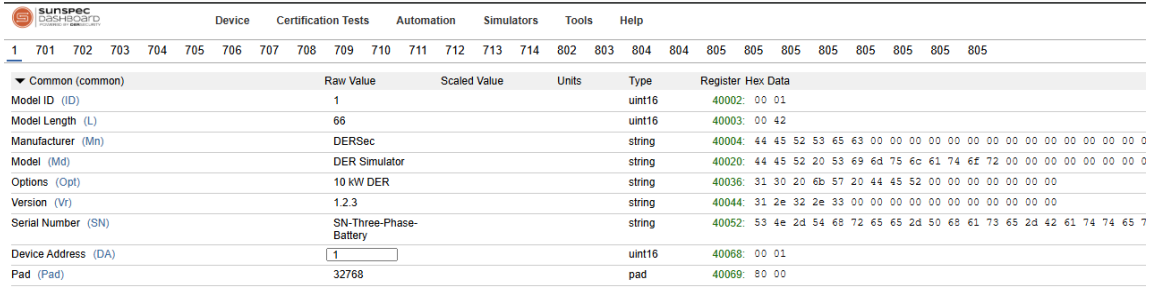
04.

Automatic Modbus registers mapping to KNX objects.
Live SunSpec data served over to the KNX control system.

SunSpec dashboard testing

SunSpec Dashboard Simulator

- DER Security Dashboard (official SunSpec tool)
- Proofed communication over mTLS
- Installed on developer PCs




```
2026-06-17 11:46:42.924638  D Lab  Using the native 3-phase battery configuration, not a JSON file...
2026-06-17 11:46:42.924824  D   No Modbus cert specified; using bundled default 'C:\Users\silr\AppData\Local\Temp\
2026-06-17 11:46:42.924857  D   No Modbus key specified; using bundled default 'C:\Users\silr\AppData\Local\Temp\
2026-06-17 11:46:42.924879  D   No Modbus client CA chain specified; using bundled default 'C:\Users\silr\AppData\L
2026-06-17 11:46:42.924928  D   No CSIP cert specified; using bundled default 'C:\Users\silr\AppData\Local\Temp\_M
2026-06-17 11:46:42.924950  D   No CSIP key specified; using bundled default 'C:\Users\silr\AppData\Local\Temp\_M
2026-06-17 11:46:42.924957  D   No CSIP root cert specified; using bundled default 'C:\Users\silr\AppData\Local\Tem
2026-06-17 11:46:42.925012  I  Lab  Starting DER Simulator(s)...
2026-06-17 11:46:42.984111  I  Lab-1  Starting DER 1 after 0 second delay
2026-06-17 11:46:43.048024  D Modbus-1  Creating SunSpec DER representation. Model definition paths: ['C:\\Users
2026-06-17 11:46:54.945269  I  Modbus-1  No I-V Curve Model 30003 so visualization website will not include this dat
2026-06-17 11:46:54.945336  I  Modbus-1  No Remote Grid/Irradiance Control Model 30004; please add it if you want
2026-06-17 11:46:54.945398  D Modbus-1  Adding model 1
2026-06-17 11:46:54.945593  D Modbus-1  Adding model 701
2026-06-17 11:46:54.945903  D Modbus-1  Adding model 702
2026-06-17 11:46:54.946030  D Modbus-1  Adding model 703
2026-06-17 11:46:54.946087  D Modbus-1  Adding model 704
2026-06-17 11:46:54.946272  D Modbus-1  Adding model 705
2026-06-17 11:46:54.946459  D Modbus-1  Adding model 706
2026-06-17 11:46:54.946579  D Modbus-1  Adding model 707
2026-06-17 11:46:54.946849  D Modbus-1  Adding model 708
2026-06-17 11:46:54.947148  D Modbus-1  Adding model 709
2026-06-17 11:46:54.947635  D Modbus-1  Adding model 710
2026-06-17 11:46:54.947955  D Modbus-1  Adding model 711
2026-06-17 11:46:54.948039  D Modbus-1  Adding model 712
2026-06-17 11:46:54.948129  D Modbus-1  Adding model 713
2026-06-17 11:46:54.948196  D Modbus-1  Adding model 714
2026-06-17 11:46:54.948241  D Modbus-1  Adding model 802
2026-06-17 11:46:54.948277  D Modbus-1  Adding model 803
2026-06-17 11:46:54.948330  D Modbus-1  Adding model 804
2026-06-17 11:46:54.948930  D Modbus-1  Adding model 804
2026-06-17 11:46:54.949020  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949046  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949070  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949090  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949110  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949134  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949153  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949177  D Modbus-1  Adding model 805
2026-06-17 11:46:54.949208  I  Modbus-1  Adding DER - sid = 1, unit id = 1, Modbus register start addr = 40000
2026-06-17 11:46:54.949498  I  Lab-1  Starting the SunSpec Modbus Server on 0.0.0.0:802, unit id 1
2026-06-17 11:46:55.077055  I  Modbus-1  DER Simulator Modbus Server starting on 0.0.0.0:802
2026-06-17 11:46:55.155129  D Lab-1  Creating the Monitoring/Control Website for DER 1. Port = 8111
2026-06-17 11:46:56.356652  D Lab  Monitoring website for DER #1 is at 127.0.0.1:8111
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Proof of Concept

SunSpec Solar Inverter

- Real SunSpec inverter on our office roof
- Connected via building LAN
- Auto-discovery in under 2 seconds
- Model IDs & register maps identified

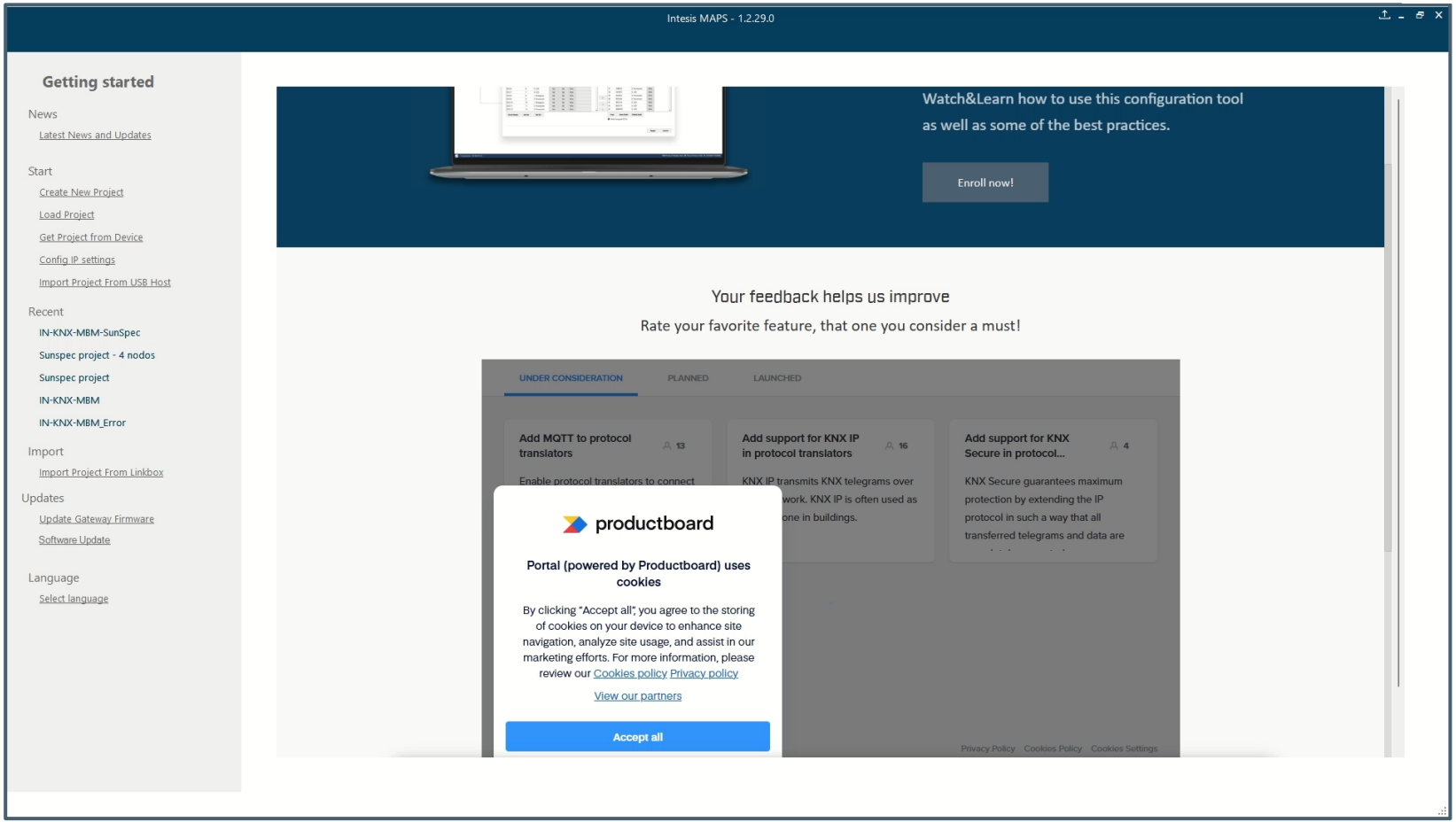


SunSpec Modbus CERTIFIED

SMA STP50-41 Inverter



Demo Intesis MAPS



Benefits SunSpec - KNX

Coordinated building energy control

Use DER data to trigger KNX automation, coordinate building loads and send supported commands to DERs.

Simplified integration and commissioning

Leverage SunSpec's standardized models and their matching with KNX signals to reduce integration work.

Secure communication over TLS

Protect data and commands between the gateway and DERs with secure TLS com.



Centralized energy monitoring

View PV generation, building consumption, battery storage and device status in a single KNX visualization.

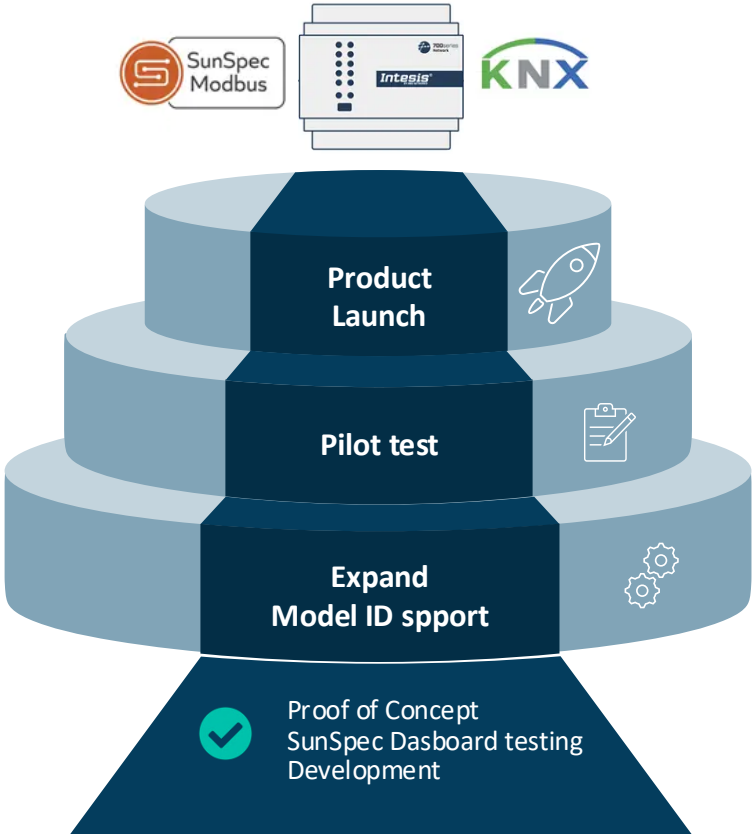
Increase solar self-consumption

Use energy information to activate or adjust flexible loads, such as air conditioning, hot water or vehicle charging, when there is a solar surplus.

Peak demand management

Coordinate or reduce non-priority loads to keep network demand within defined limits.

What's next

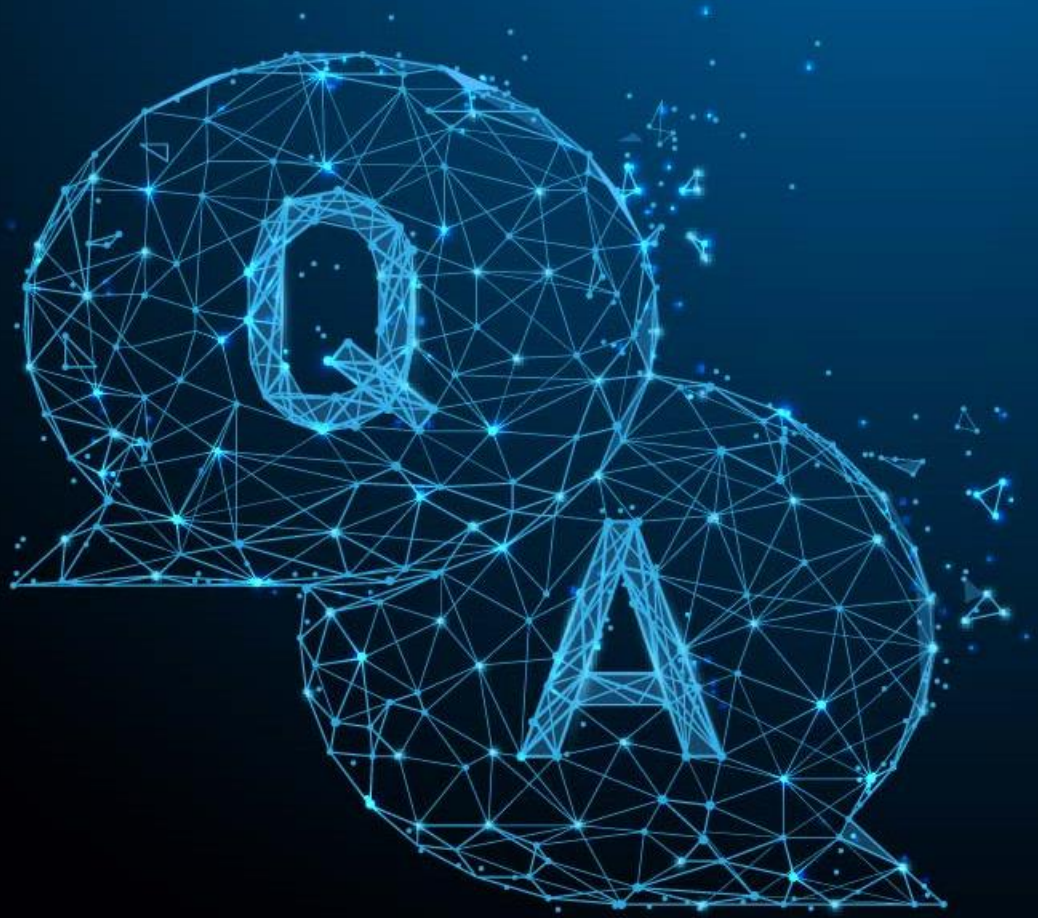


Q1 2027

- Complete SunSpec certification as part of the product launch plan.
- Prepare documentation and resources for system integrators.

- Deploy the solution in a real installation with a KNX control system
- Validate monitoring and control functions under real operating conditions.

- Implement broader SunSpec Model IDs like battery storage, EVchargers and other DER



Questions?

Thank You

Contact **membership@sunspec.org**
with any questions.