

WHITE PAPER

SunSpec Mapping
with the KNX Standard

Integrating SunSpec-compliant inverters, storage and other distributed energy resources into KNX installations for holistic energy management in homes and buildings.

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KNX Association in cooperation with **SunSpec Alliance**

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1. INTRODUCTION

SunSpec is a well-established set of specifications widely used among Decentralized Energy Resources (DER) manufacturers and solution providers in the energy management spectrum, especially among manufacturers of inverters, which is a key component in any electrical installation where there is energy production and/or energy storage. SunSpec specifies models, which contain information about different DERs, and that ensure compatibility among vendors. While SunSpec determines the type of information that must be shared, it does not specify the underlying communication protocol, yet Modbus is a very popular solution in the industry.

KNX is a communication protocol (ISO-IEC 14543-3-11) adopted by more than 500 manufacturers worldwide. With an electrical background, KNX certified devices cover all the applications in the household and building environments (lighting, HVAC, shading, access, energy…). KNX devices are grouped into a network, without the need for a central hub, traditionally deployed using a dedicated bus of communication, although IP is commonly used as a backbone. With the recent extension of the ecosystem, known as KNX IoT, KNX devices can be designed to communicate over IPv6 networks (Ethernet, SPE, Wi-Fi, Thread), expanding its possibilities and making it even more appealing to a wider spectrum of manufacturers.

In a rising demand for combining DERs with all the electrical loads in the household and buildings in general, where KNX technology is a key player at a worldwide scale, it becomes apparent that the combination of SunSpec and KNX provides a holistic solution in the energy management spectrum: inverters and loads can be connected by means of an unifying protocol, adopted by 500+ manufacturers worldwide, many of them with a large tradition in the electrical manufacturing. This combination opens up endless opportunities to enhance the energy management landscape, achieving cohesive solutions for energy management.

Opportunity

The most compelling opportunity in joining SunSpec and KNX is the creation of a single, vendor agnostic control plane that closes the loop between distributed energy resources (especially inverters and storage) and the electrical loads they must orchestrate. SunSpec contributes a common, multi-vendor data model for DERs; KNX contributes a globally deployed automation network and engineering toolchain (ETS) that already spans lighting, HVAC, metering, EV charging, and more. Together, they turn households and buildings into actively managed energy ecosystems rather than collections of siloed devices. In practical terms, this pairing turns SunSpec's interoperable semantics into actionable commands on a field proven backbone deployable by 130000+ KNX certified installers worldwide, dramatically reducing integration effort and time to market while giving integrators a repeatable recipe for self-consumption, demand response, and resilience use cases.

2. DEVELOPMENT ROADMAP

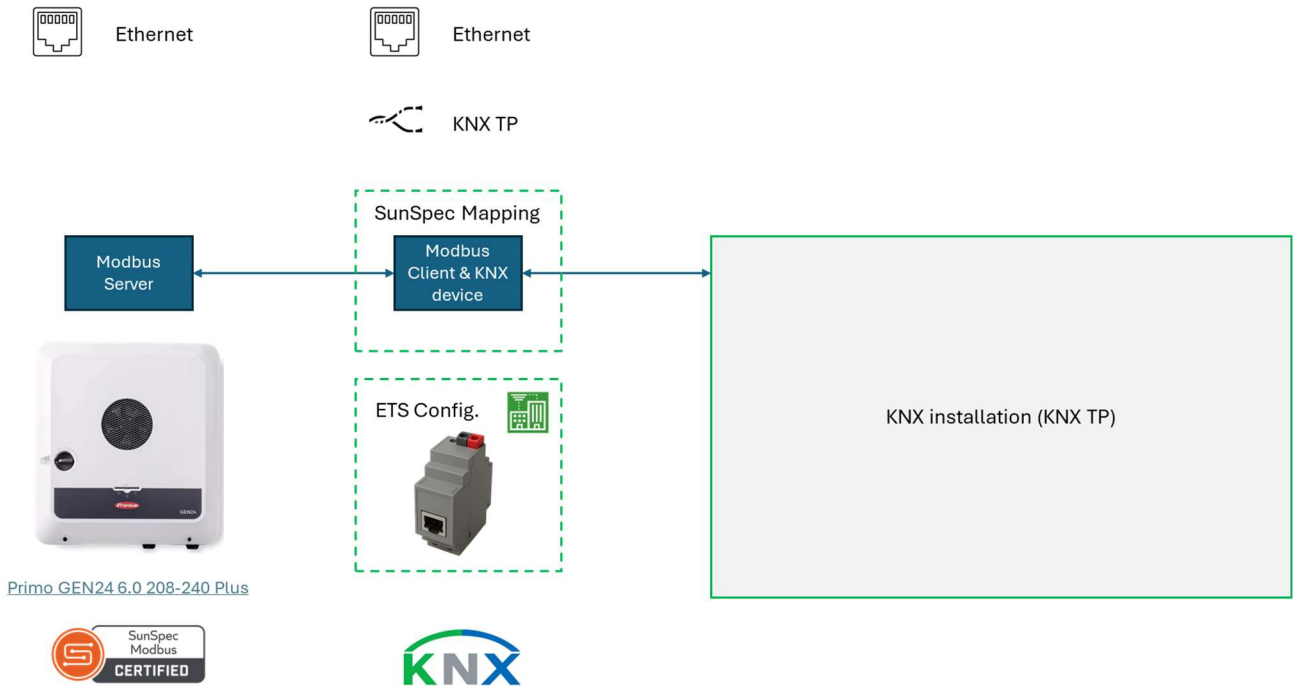
2.1. OBJECTIVES AND DESIGN PRINCIPLES

To accelerate adoption with minimal re-engineering, follow an evolutionary path:

1. Middleware (Gateway) first — fastest time-to-market by reusing existing Modbus to KNX implementations.
2. IP-native Middleware — adds flexibility and higher throughput while keeping the inverter firmware unchanged.
3. Native KNX implementation in the inverter — highest integration depth, security-by-design, and lifecycle simplicity.

Across all scenarios, the mapping applies a direct translation principle whereby each SunSpec point is represented by a KNX Datapoint Type (DPT) offering the closest correspondence in unit and semantics. Where no existing KNX DPT offers an adequate match, ad-hoc DPTs have been defined (see Annexes II and III). These ad-hoc DPTs are not yet part of the official list of KNX DPTs, and their identifiers are provisional.

2.2. MIDDLEWARE MODBUS TO KNX TWISTED PAIR APPROACH



Purpose

- Deliver a Modbus–KNX TP gateway that connects a SunSpec inverter to KNX installations.

Architecture

- Inverter remains SunSpec over Modbus.
- Gateway acts as Modbus client on the inverter side and a KNX TP device on the building side, exposing KNX group objects that map 1:1 to selected SunSpec models/points.

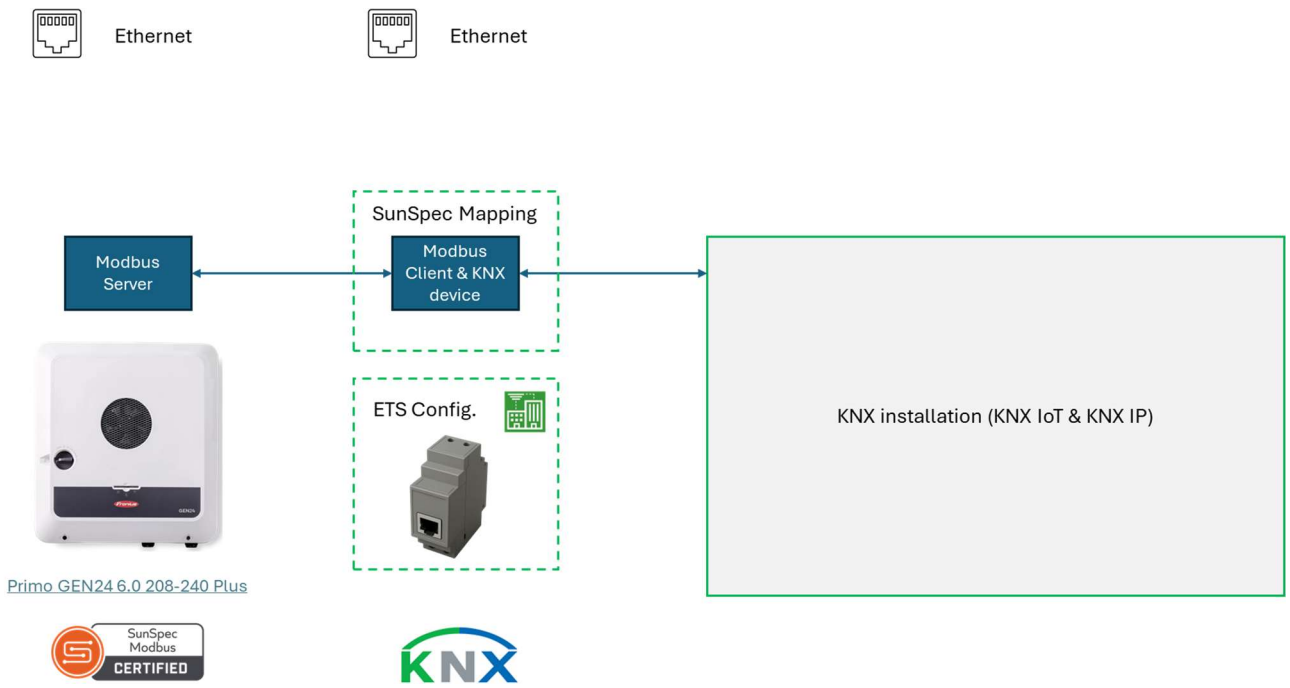
Why start here

- No inverter firmware change; minimal engineering required.
- Immediate KNX certification path for the gateway as a standard KNX device.
- Installer familiarity: ETS-based configuration; works in classic KNX TP networks.

Pros/Cons

- Pros: fastest market entry, preserves inverter certification baseline, leverages existing KNX Classic certified devices.
- Cons: additional hardware required for integration translates into additional costs.

2.3. MIDDLEWARE MODBUS TO KNX IP APPROACH



Purpose

- Same mapping as Scenario 1, but the gateway uses KNX IP (either KNXnet/IP or KNX IoT).

Architecture

- Inverter side unchanged (SunSpec over Modbus).
- Gateway is a KNXnet/IP or KNX IoT device; it participates in KNX IP networks and is configured with ETS.

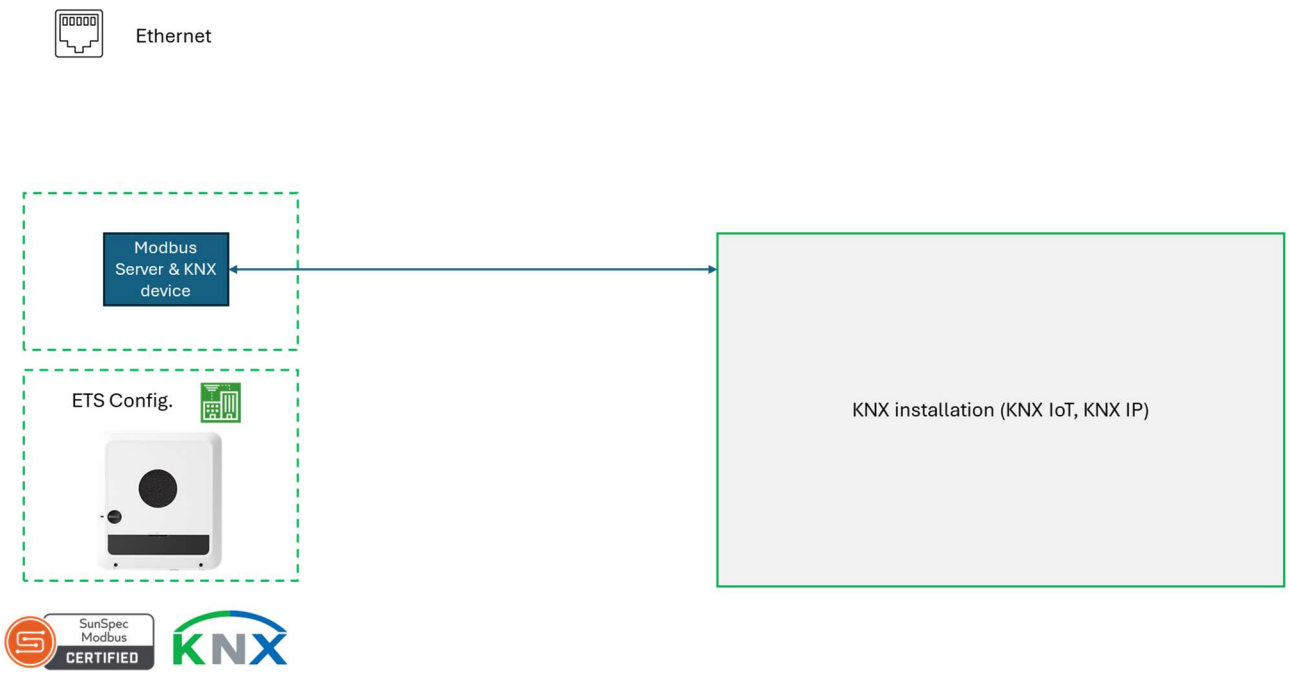
What you gain

- Higher throughput and topology flexibility through the use of IP, which leverages standard IT infrastructure for scalable, high-performance communication and versatile network architectures.
- Easier multi-inverter aggregation and site gateways (PV + battery + EVSE).

Pros/Cons

- Pros: better scalability, no dedicated KNX physical layer.
- Cons: still a separate gateway device; Modbus polling remains.

2.4. NATIVE DEVELOPMENT APPROACH



Purpose

- Integrate KNX directly into the inverter, either via KNXnet/IP (IPv4) or via KNX IoT (IPv6, open source stack available).

Architecture

- The inverter application exposes KNX objects/resources natively.
- KNX interface over IP (Ethernet/Wi-Fi/SPE…).

What you gain

- Lower BOM and fewer failure points (no external gateway).
- Security-by-design with KNX IoT or via KNX IP Secure implementation (KNXnet/IP).
- Unified lifecycle (one firmware, one device), simpler service operations.

Pros/Cons

- Pros: best installer experience, strongest security posture, long-term TCO.
- Cons: requires inverter firmware integration and KNX certification of the whole appliance.

2.5. SECURITY LANDSCAPE

Regulations, standards, and why KNX is fit for purpose

Cyber Resilience Act (CRA). The CRA introduces EU-wide, mandatory cybersecurity requirements for "products with digital elements" (hardware and software) across the entire lifecycle—from secure-by-design development and documentation through vulnerability handling and updates. The regulation entered into force on 10 December 2024, with most obligations applying from 11 December 2027; CRA products will carry the CE mark for conformity. This creates a clear baseline for connected devices deployed in buildings and energy systems.

Implication for DERs and buildings: Whether mandatory (CRA, PSTI) or market-driven (U.S., Singapore), the direction is the same: demonstrable security by design, documented vulnerability handling, and secure operations at setup and runtime—all directly relevant to inverters, storage, EVSE and the loads they coordinate.

How KNX satisfies (and anticipates) these requirements

a. KNX Data Secure (for KNX TP / RF).
   Encrypts and authenticates selected KNX telegrams on the fieldbus. ETS generates per-group security keys and provisions them securely during commissioning, enabling granular protection of read/write group addresses (e.g., inverter setpoints). Mixed "secure + plain" operation is possible for phased rollouts.

b. KNX IP Secure (for KNXnet/IP based products and backbones).
   Secures tunnelling and routing on IP using authenticated, encrypted communication; backbone/multicast keys are generated and managed by ETS during secure commissioning. KNX IP communication—including its secure profile—is standardized internationally as ISO 22510:2019 (and EN ISO 22510 in Europe).

c. KNX IoT — secure by design.
   KNX IoT adopts IETF OSCORE (RFC 8613) to provide end-to-end protection at the application layer over CoAP/CBOR/COSE—even across proxies. This brings modern, Internet-grade cryptography and message integrity directly into the KNX data model and onboarding flows.

3. KNX CERTIFICATION

KNX is a beacon of interoperability, with 35 years of proven reliability. A product bearing the KNX trademark is identified by 140000+ certified installers, and it can immediately function in a KNX network with minimal effort and guaranteed interoperability at application level.

KNX certification observes the device or appliance as three parts:

a. Physical Layer
   Covered by the KNX specifications, KNX devices communicating over Twisted Pair (SELV 29VDC) or Radio Frequency (sub GHz) must have a certified physical layer onboard. Conveniently, major electronic suppliers offer certified KNX physical layers as system components, which certification can be inherited by the KNX manufacturer towards the end device. In case of using IPv4 or IPv6 for communication, KNX certification of the physical layer is not required.

b. Stack
   A KNX certified stack is required as part of the product's firmware, which ensures that the device behaves according to the KNX specifications when communicating with ETS (the vendor-independent system integration tool) or with other KNX certified devices. There are various profiles of stacks, as described in the KNX specifications, which are certified in combination with the Physical Layer. Within the KNX TP, RF and IPv4 domains, there are KNX Members offering certified stacks for a variety of physical layers, which again can be inherited by the KNX manufacturer towards the end device. In case of opting for KNX IoT, there is an open source stack, which can be ported to any IPv6 platform, and then certified, as well there are KNX Members offering certified system components using the open source stack, which are ready for deployment.

c. Application Program
   This last piece of the puzzle is specific to the end device. It is created with a tool called Manufacturer Tool, and the result is a KNX specific product file, which can be imported in the ETS environment, thus enabling the configuration in the KNX network together with any other KNX device. In the situation that is described in this white paper, the Application Program will contain the datapoints that are mapped based on the SunSpec models. For example, a middleware device that follows the scenario 2 (SunSpec Modbus to KNX IP), will have an Application Program that can contain the collection of all the SunSpec models. The ETS would allow the system integrator to select the model that matches the inverter, and this would result in the list of datapoints according to the mapping described here.

Certification will depend on the approach selected, and also based on the combination of the three parts described above. Two options unfold:

3.1. CERTIFICATION IN MIDDLEWARE APPROACH

When a device or appliance seeks KNX certification, the KNX manufacturer had taken into account the three parts: Physical Layer, Stack and Application Program. How the parts are combined, is up to the manufacturer. In case of opting for the middleware approach, a manufacturer can combine existing certified system components, or even leverage an already certified device (this is known as OEM). Examples:

a. A manufacturer leverages a certified system component that includes Ethernet and the KNX IoT open source stack. The only missing KNX part is the Application Program, which is entirely software. This Application Program is then submitted to certification to any accredited KNX Test Lab together with the hardware (which is based on already certified parts).
b. A manufacturer signs an agreement with another KNX manufacturer that already supplies Modbus to KNX gateways (OEM provider). The existing application program is customized according to the SunSpec mapping, and it is recertified (if done by the OEM provider) or submitted to certification (if done by the manufacturer).

It is relevant to highlight that ISO9001 certification is required to submit a KNX product for certification, unless the HW is entirely produced by a manufacturer that already holds such certification, and given that the product is assembled at its premises.

3.2. CERTIFICATION IN NATIVE APPROACH

In this scenario, the manufacturer will add the necessary components to the appliance, which enable the KNX connectivity. Since there are no KNX-specific physical parts required, the manufacturer will need to:

a. IPv6 (IoT): Certify the combination resulting of porting the open source stack onto the IP network platform that is onboard. It could also opt for an existing platform that is already certified, in which case it does not require KNX certification since it is leveraging an existing certified system component.
b. IPv4: Certify the stack developed by the manufacturer together with the IP network platform that is being used by the device. Like in the previous case, it can also take recourse of an existing certified system component.

Once the stack and platform is covered, the last part that requires certification is the Application Program, which is the same under all scenarios.

The volume 5 of the KNX specifications contain all the relevant information required to submit a product for certification. A GPT agent is also available that has been trained with the KNX specifications, which can be used for orientation purposes.

4. SYSTEM INTEGRATION

4.1. SYSTEM INTEGRATION IN MIDDLEWARE APPROACH

When using a middleware option, the device must be installed and connected to both sides: Modbus on one side and KNX on the other side (either the KNX Twisted Pair or an IP based connector, such as an Ethernet port). Once the physical device is installed, the next steps will be followed:

1. Establish the Modbus communication: Configure the inverter, which acts as a Modbus Server, to the middleware device, which acts as a Modbus Client.
2. Verify the SunSpec configuration and access to the Modbus registers using the SunSpec Dashboard.
3. Add the device in the ETS environment, and proceed to configure the physical address and transfer the Application Program. The Application Program is available via the Online Catalogue, under the manufacturer's name.
4. Continuing with ETS, link the relevant SunSpec datapoints with the required Group Addresses.
5. Transfer the final configuration, your SunSpec certified inverter is sending and receiving information to the KNX installation.

4.2. SYSTEM INTEGRATION IN NATIVE APPROACH

In this approach, the step 1 and 2 from the previous approach are removed, therefore only steps 3 to 5 are required:

1. Add the device in the ETS environment, and proceed to configure the physical address and transfer the Application Program. The Application Program is available via the Online Catalogue, under the manufacturer's name.
2. Continuing with ETS, link the relevant SunSpec datapoints with the required Group Addresses.
3. Transfer the final configuration, your SunSpec certified inverter is sending and receiving information to the KNX installation.

ANNEX I – SUNSPEC 700-SERIES MODELS MAPPING

This annex maps every point of the SunSpec 700-series DER information models (models 701 to 715) to a KNX Datapoint Type (DPT). For each point, the tables give the SunSpec point name, label, data type, units, access and mandatory flag, as defined in the SunSpec Information Model Reference, together with the KNX DPT selected for it.

The following conventions apply:

- Scale-factor points (type sunssf) are not listed. They are only needed to interpret integer Modbus registers, whereas the KNX DPTs carry the scaled value directly.
- Enumeration and bitfield values are not repeated here. The encoding of each ad-hoc DPT is given in Annex III.
- Points inside repeating or grouped structures (curves, curve points, control sets, DC ports, power factor settings) are prefixed with their group path, e.g. Crv.Pt.V.
- Points shaded in green use an **ad-hoc DPT** (see Annexes II and III). Ad-hoc DPTs are not yet part of the official list of KNX DPTs.
- R/W: R = read-only, RW = read-write. M: point is mandatory in the SunSpec model.

Source: SunSpec Information Model Reference (generated 2021-12-09), © SunSpec Alliance, used under the agreement between SunSpec Alliance and KNX Association.

Model 701 – DER AC Measurement (DERMeasureAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Wiring Type								
ACType	AC Wiring Type	enum16		R	M	**Ad-hoc DPT**	**DPT_ACWiringType**	
Operating State								
St	Operating State	enum16		R		1.011	DPT_State	
Inverter State								
InvSt	Inverter State	enum16		R		**Ad-hoc DPT**	**DPT_DER_InverterState**	
Grid Connection State								
ConnSt	Grid Connection State	enum16		R		**Ad-hoc DPT**	**DPT_DER_GridConnectionState**	
Alarms								
Alrm	Alarm Bitfield	bitfield32		R		**Ad-hoc DPT**	**DPT_DER_Alarms**	
DERMode	DER Operational Characteristics	bitfield32		R		**Ad-hoc DPT**	**DPT_DER_Mode**	
Summary								
W	Active Power	int16	W	R		14.056	DPT_Value_Power	
VA	Apparent Power	int16	VA	R		14.080	DPT_Value_ApparentPower	
Var	Reactive Power	int16	Var	R		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	

Model 701 – DER AC Measurement (DERMeasureAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
PF	Power Factor	int16		R		14.057	DPT_Value_Power_Factor	
A	Total AC Current	int16	A	R		14.019	DPT_Value_Electric_Current	
LLV	Voltage LL	uint16	V	R		14.027	DPT_Value_Electric_Potential	
LNV	Voltage LN	uint16	V	R		14.027	DPT_Value_Electric_Potential	
Hz	Frequency	uint32	Hz	R		14.033	DPT_Value_Frequency	
TotWhInj	Total Energy Injected	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotWhAbs	Total Energy Absorbed	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotVarhInj	Total Reactive Energy Inj	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
TotVarhAbs	Total Reactive Energy Abs	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
Temperatures								
TmpAmb	Ambient Temperature	int16	C	R		9.001	DPT_Value_Temp	
TmpCab	Cabinet Temperature	int16	C	R		9.001	DPT_Value_Temp	
TmpSnk	Heat Sink Temperature	int16	C	R		9.001	DPT_Value_Temp	
TmpTrns	Transformer Temperature	int16	C	R		9.001	DPT_Value_Temp	
TmpSw	IGBT/MOSFET Temperature	int16	C	R		9.001	DPT_Value_Temp	
TmpOt	Other Temperature	int16	C	R		9.001	DPT_Value_Temp	
L1								
WL1	Watts L1	int16	W	R		14.056	DPT_Value_Power	
VAL1	VA L1	int16	VA	R		14.080	DPT_Value_ApparentPower	
VarL1	Var L1	int16	Var	R		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
PFL1	PF L1	int16		R		14.057	DPT_Value_Power_Factor	
AL1	Amps L1	int16	A	R		14.019	DPT_Value_Electric_Current	
VL1L2	Phase Voltage L1-L2	uint16	V	R		14.027	DPT_Value_Electric_Potential	
VL1	Phase Voltage L1-N	uint16	V	R		14.027	DPT_Value_Electric_Potential	
TotWhInjL1	Total Watt-Hours Inj L1	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotWhAbsL1	Total Watt-Hours Abs L1	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotVarhInjL1	Total Var-Hours Inj L1	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
TotVarhAbsL1	Total Var-Hours Abs L1	uint64	Varh	R		13.012	DPT_ReactiveEnergy	

Model 701 – DER AC Measurement (DERMeasureAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
L2								
WL2	Watts L2	int16	W	R		14.056	DPT_Value_Power	
VAL2	VA L2	int16	VA	R		14.080	DPT_Value_ApparentPower	
VarL2	Var L2	int16	Var	R		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
PFL2	PF L2	int16		R		14.057	DPT_Value_Power_Factor	
AL2	Amps L2	int16	A	R		14.019	DPT_Value_Electric_Current	
VL2L3	Phase Voltage L2-L3	uint16	V	R		14.027	DPT_Value_Electric_Potential	
VL2	Phase Voltage L2-N	uint16	V	R		14.027	DPT_Value_Electric_Potential	
TotWhInjL2	Total Watt-Hours Inj L2	uint64	Wh	R		13.012	DPT_ReactiveEnergy	
TotWhAbsL2	Total Watt-Hours Abs L2	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotVarhInjL2	Total Var-Hours Inj L2	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
TotVarhAbsL2	Total Var-Hours Abs L2	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
L3								
WL3	Watts L3	int16	W	R		14.056	DPT_Value_Power	
VAL3	VA L3	int16	VA	R		14.080	DPT_Value_ApparentPower	
VarL3	Var L3	int16	Var	R		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
PFL3	PF L3	int16		R		14.057	DPT_Value_Power_Factor	
AL3	Amps L3	int16	A	R		14.019	DPT_Value_Electric_Current	
VL3L1	Phase Voltage L3-L1	uint16	V	R		14.027	DPT_Value_Electric_Potential	
VL3	Phase Voltage L3-N	uint16	V	R		14.027	DPT_Value_Electric_Potential	
TotWhInjL3	Total Watt-Hours Inj L3	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotWhAbsL3	Total Watt-Hours Abs L3	uint64	Wh	R		13.010	DPT_ActiveEnergy	
TotVarhInjL3	Total Var-Hours Inj L3	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
TotVarhAbsL3	Total Var-Hours Abs L3	uint64	Varh	R		13.012	DPT_ReactiveEnergy	
Active Power Throttling								
ThrotPct	Throttling In Pct	uint16	Pct	R		5.001	DPT_Scaling	
ThrotSrc	Throttle Source Information	bitfield32		R		**Ad-hoc DPT**	**DPT_DER_ThrottleSource**	

Model 701 – DER AC Measurement (DERMeasureAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Scale Factors								
Manufacturer Alarm Information								
MnAlrmInfo	Manufacturer Alarm Info	string(32)		R		16.000	DPT_String_ASCII	Limited to 14 characters. If 32 characters are needed, an Ad-hoc DPT is required

Model 702 – DER Capacity (DERCapacity)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Nameplate Ratings - Specifies capacity ratings								
WMaxRtg	Active Power Max Rating	uint16	W	R		14.056	DPT_Value_Power	
WOvrExtRtg	Active Power (Over-Excited) Rating	uint16	W	R		14.056	DPT_Value_Power	
WOvrExtRtgPF	Specified Over-Excited PF	uint16		R		14.057	DPT_Value_Power_Factor	
WUndExtRtg	Active Power (Under-Excited) Rating	uint16	W	R		14.056	DPT_Value_Power	
WUndExtRtgPF	Specified Under-Excited PF	uint16		R		14.057	DPT_Value_Power_Factor	
VAMaxRtg	Apparent Power Max Rating	uint16	VA	R		14.080	DPT_Value_ApparentPower	
VarMaxInjRtg	Reactive Power Injected Rating	uint16	Var	R		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
VarMaxAbsRtg	Reactive Power Absorbed Rating	uint16	Var	R		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
WChaRteMaxRtg	Charge Rate Max Rating	uint16	W	R		14.056	DPT_Value_Power	
WDisChaRteMaxRtg	Discharge Rate Max Rating	uint16	W	R		14.056	DPT_Value_Power	
VAChaRteMaxRtg	Charge Rate Max VA Rating	uint16	VA	R		14.080	DPT_Value_ApparentPower	
VADisChaRteMaxRtg	Discharge Rate Max VA Rating	uint16	VA	R		14.080	DPT_Value_ApparentPower	
VNomRtg	AC Voltage Nominal Rating	uint16	V	R		14.027	DPT_Value_Electric_Potential	
VMaxRtg	AC Voltage Max Rating	uint16	V	R		14.027	DPT_Value_Electric_Potential	
VMinRtg	AC Voltage Min Rating	uint16	V	R		14.027	DPT_Value_Electric_Potential	
AMaxRtg	AC Current Max Rating	uint16	A	R		14.019	DPT_Value_Electric_Current	
PFOvrExtRtg	PF Over-Excited Rating	uint16		R		14.057	DPT_Value_Power_Factor	
PFUndExtRtg	PF Under-Excited Rating	uint16		R		14.057	DPT_Value_Power_Factor	
ReactSusceptRtg	Reactive Susceptance	uint16	S	R		**Ad-hoc DPT**	**DPT_Value_Susceptance**	
NorOpCatRtg	Normal Operating Category	enum16		R		**Ad-hoc DPT**	**DPT_DER_NormalOpCategory**	

Model 702 – DER Capacity (DERCapacity)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
AbnOpCatRtg	Abnormal Operating Category	enum16		R		**Ad-hoc DPT**	**DPT_DER_AbnormalOpCategory**	
CtrlModes	Supported Control Modes	bitfield32		R		**Ad-hoc DPT**	**DPT_DER_ControlModes**	
IntIslandCatRtg	Intentional Island Categories	bitfield16		R		**Ad-hoc DPT**	**DPT_DER_IntentionalIslandingCategories**	
Settings - Used to adjust nameplate ratings								
WMax	Active Power Max Setting	uint16	W	RW		14.056	DPT_Value_Power	
WMaxOvrExt	Active Power (Over-Excited) Setting	uint16	W	RW		14.056	DPT_Value_Power	
WOvrExtPF	Specified Over-Excited PF	uint16		RW		14.057	DPT_Value_Power_Factor	
WMaxUndExt	Active Power (Under-Excited) Setting	uint16	W	RW		14.056	DPT_Value_Power	
WUndExtPF	Specified Under-Excited PF	uint16		RW		14.057	DPT_Value_Power_Factor	
VAMax	Apparent Power Max Setting	uint16	VA	RW		14.080	DPT_Value_ApparentPower	
VarMaxInj	Reactive Power Injected Setting	uint16	Var	RW		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
VarMaxAbs	Reactive Power Absorbed Setting	uint16	Var	RW		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
WChaRteMax	Charge Rate Max Setting	uint16	W	RW		14.056	DPT_Value_Power	
WDisChaRteMax	Discharge Rate Max Setting	uint16	W	RW		14.056	DPT_Value_Power	
VAChaRteMax	Charge Rate Max VA Setting	uint16	VA	RW		14.080	DPT_Value_ApparentPower	
VADisChaRteMax	Discharge Rate Max VA Setting	uint16	VA	RW		14.080	DPT_Value_ApparentPower	
VNom	Nominal AC Voltage Setting	uint16	V	RW		14.027	DPT_Value_Electric_Potential	
VMax	AC Voltage Max Setting	uint16	V	RW		14.027	DPT_Value_Electric_Potential	
VMin	AC Voltage Min Setting	uint16	V	RW		14.027	DPT_Value_Electric_Potential	
AMax	AC Current Max Setting	uint16	A	RW		14.019	DPT_Value_Electric_Current	
PFOvrExt	PF Over-Excited Setting	uint16		RW		14.057	DPT_Value_Power_Factor	
PFUndExt	PF Under-Excited Setting	uint16		RW		14.057	DPT_Value_Power_Factor	
IntIslandCat	Intentional Island Categories	bitfield16		RW		**Ad-hoc DPT**	**DPT_DER_IntentionalIslandingCategories**	
Scale Factors								

Model 703 – Enter Service (DEREnterService)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	

Model 703 – Enter Service (DEREnterService)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ES	Permit Enter Service	enum16		RW		1.003	DPT_Enable	
ESVHi	Enter Service Voltage High	uint16	Pct	RW		5.001	DPT_Scaling	
ESVLo	Enter Service Voltage Low	uint16	Pct	RW		5.001	DPT_Scaling	
ESHzHi	Enter Service Frequency High	uint32	Hz	RW		14.033	DPT_Value_Frequency	
ESHzLo	Enter Service Frequency Low	uint32	Hz	RW		14.033	DPT_Value_Frequency	
ESDlyTms	Enter Service Delay Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
ESRndTms	Enter Service Random Delay	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
ESRmpTms	Enter Service Ramp Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
ESDlyRemTms	Enter Service Delay Remaining	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	

Model 704 – DER AC Controls (DERCtlAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Set Power Factor (when injecting active power)								
PFWInjEna	Power Factor Enable (W Inj) Enable	enum16		RW		1.003	DPT_Enable	
PFWInjEnaRvrt	Power Factor Reversion Enable (W Inj)	enum16		RW		1.003	DPT_Enable	
PFWInjRvrtTms	PF Reversion Time (W Inj)	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
PFWInjRvrtRem	PF Reversion Time Rem (W Inj)	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
Set Power Factor (when absorbing active power)								
PFWAbsEna	Power Factor Enable (W Abs) Enable	enum16		RW		1.003	DPT_Enable	
PFWAbsEnaRvrt	Power Factor Reversion Enable (W Abs)	enum16		RW		1.003	DPT_Enable	
PFWAbsRvrtTms	PF Reversion Time (W Abs)	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
PFWAbsRvrtRem	PF Reversion Time Rem (W Abs)	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
Limit Maximum Active Power Generation								
WMaxLimPctEna	Limit Max Power Pct Enable	enum16		RW		1.003	DPT_Enable	
WMaxLimPct	Limit Max Power Pct Setpoint	uint16	Pct	RW		5.001	DPT_Scaling	
WMaxLimPctRvrt	Reversion Limit Max Power Pct	uint16	Pct	RW		5.001	DPT_Scaling	
WMaxLimPctEnaRvrt	Reversion Limit Max Power Pct Enable	enum16		RW		1.003	DPT_Enable	
WMaxLimPctRvrtTms	Limit Max Power Pct Reversion Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	

Model 704 – DER AC Controls (DERCtlAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
WMaxLimPctRvrtRem	Limit Max Power Pct Rev Time Rem	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
Set Active Power Level (may be negative for charging)								
WSetEna	Set Active Power Enable	enum16		RW		1.003	DPT_Enable	
WSetMod	Set Active Power Mode	enum16		RW		**Ad-hoc DPT**	**DPT_DER_SetActivePowerMode**	
WSet	Active Power Setpoint (W)	int32	W	RW		14.056	DPT_Value_Power	
WSetRvrt	Reversion Active Power (W)	int32	W	RW		14.056	DPT_Value_Power	
WSetPct	Active Power Setpoint (Pct)	int16	Pct	RW		5.001	DPT_Scaling	
WSetPctRvrt	Reversion Active Power (Pct)	int16	Pct	RW		5.001	DPT_Scaling	
WSetEnaRvrt	Reversion Active Power Enable	enum16		RW		1.003	DPT_Enable	
WSetRvrtTms	Active Power Reversion Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
WSetRvrtRem	Active Power Rev Time Rem	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
Set Reactive Power Level								
VarSetEna	Set Reactive Power Enable	enum16		RW		1.003	DPT_Enable	
VarSetMod	Set Reactive Power Mode	enum16		RW		**Ad-hoc DPT**	**DPT_DER_SetReactivePowerMode**	
VarSetPri	Reactive Power Priority	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PowerPriority**	
VarSet	Reactive Power Setpoint (Vars)	int32	Var	RW		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
VarSetRvrt	Reversion Reactive Power (Vars)	int32	Var	RW		**Ad-hoc DPT**	**DPT_Value_ReactivePower**	
VarSetPct	Reactive Power Setpoint (Pct)	int16	Pct	RW		5.001	DPT_Scaling	
VarSetPctRvrt	Reversion Reactive Power (Pct)	int16	Pct	RW		5.001	DPT_Scaling	
VarSetEnaRvrt	Reversion Reactive Power Enable	enum16		RW		1.003	DPT_Enable	
VarSetRvrtTms	Reactive Power Reversion Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
VarSetRvrtRem	Reactive Power Rev Time Rem	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
Ramp Rate								
WRmp	Normal Ramp Rate	uint16	%Max/Sec	RW		5.001	DPT_Scaling	If the device allows >100 %/s, either cap at 100 on KNX or apply a gateway-side scale (e.g., 0–100 KNX ⇒ 0–200 %/s device).
WRmpRef	Normal Ramp Rate Reference	enum16		RW		**Ad-hoc DPT**	**DPT_DER_RampRateRef**	
VarRmp	Reactive Power Ramp Rate	uint16	%Max/Sec	RW		5.001	DPT_Scaling	
AntiIslEna	Anti-Islanding Enable	enum16		RW		1.003	DPT_Enable	

Model 704 – DER AC Controls (DERCtlAC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Scale Factors								
Power Factor Settings								
Grouped setting PFWInj – Power Factor (W Inj)								
PFWInj.PF	Power Factor (W Inj)	uint16		RW		14.057	DPT_Value_Power_Factor	
PFWInj.Ext	Power Factor Excitation (W Inj)	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PF_Excitation**	
Grouped setting PFWInjRvrt – Reversion Power Factor (W Inj)								
PFWInjRvrt.PF	Reversion Power Factor (W Inj)	uint16		RW		14.057	DPT_Value_Power_Factor	
PFWInjRvrt.Ext	Reversion PF Excitation (W Inj)	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PF_Excitation**	
Grouped setting PFWAbs – Power Factor (W Abs)								
PFWAbs.PF	Power Factor (W Abs)	uint16		RW		14.057	DPT_Value_Power_Factor	
PFWAbs.Ext	Power Factor Excitation (W Abs)	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PF_Excitation**	
Grouped setting PFWAbsRvrt – Reversion Power Factor (W Abs)								
PFWAbsRvrt.PF	Reversion Power Factor (W Abs)	uint16		RW		14.057	DPT_Value_Power_Factor	
PFWAbsRvrt.Ext	Reversion PF Excitation (W Abs)	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PF_Excitation**	

Model 705 – DER Volt-Var (DERVoltVar)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Volt-Var Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Adopt Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Adopt Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrv	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
RvrtTms	Reversion Timeout	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
RvrtRem	Reversion Time Remaining	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
RvrtCrv	Reversion Curve	uint16		RW		7.001	DPT_Value_2_Ucount	
Stored Curve Sets - Number of curve sets contained in NCrv - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrv times)								
Crv.ActPt	Active Points	uint16		RW	M	7.001	DPT_Value_2_Ucount	
Crv.DeptRef	Dependent Reference	enum16		RW	M	**Ad-hoc DPT**	**DPT_DER_CurveDependentRef**	

Model 705 – DER Volt-Var (DERVoltVar)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Crv.Pri	Power Priority	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PowerPriority**	
Crv.VRef	Vref Adjustment	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.VRefAuto	Current Autonomous Vref	uint16	VNomPct	R		5.001	DPT_Scaling	
Crv.VRefAutoEna	Autonomous Vref Enable	enum16		RW		1.003	DPT_Enable	
Crv.VRefAutoTms	Auto Vref Time Constant	uint16	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Crv.RspTms	Open Loop Response Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	
Stored Curve Sets - Curve points for each stored curve - Number of curve points contained in NPt								
Repeating group Crv.Pt – Stored Curve Points (repeated NPt times)								
Crv.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.Pt.Var	Reactive Power Point	int16	DeptRef	RW		6.001	DPT_Percent_V8	Signed percentage of the dependent reference (DeptRef).

Model 706 – DER Volt-Watt (DERVoltWatt)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Volt-Watt Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Adopt Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Adopt Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrv	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
RvrtTms	Reversion Timeout	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
RvrtRem	Reversion Time Remaining	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
RvrtCrv	Reversion Curve	uint16		RW		7.001	DPT_Value_2_Ucount	
Stored curve sets - Number of curve sets contained in NCrv - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrv times)								
Crv.ActPt	Active Points	uint16		RW	M	7.001	DPT_Value_2_Ucount	
Crv.DeptRef	Dependent Reference	enum16		RW	M	**Ad-hoc DPT**	**DPT_DER_VoltWattDependentRef**	
Crv.RspTms	Open Loop Response Time	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	

Model 706 – DER Volt-Watt (DERVoltWatt)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Stored curve sets - curve points for each stored curve - Number of curve points contained in NPt								
Repeating group Crv.Pt – Stored Curve Points (repeated NPt times)								
Crv.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.Pt.W	Dependent Reference	int16	DeptRef	RW		5.001	DPT_Scaling	

Model 707 – DER Trip LV (DERTripLV)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Trip LV Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Adopt Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Adopt Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrvSet	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
Stored curve sets - Number of curve sets contained in NCrvSet - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrvSet times)								
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	
Stored curve set containing a Must Trip, May Trip, and Momentary Cessation Curve - Number of curve points contained in NPt								
Repeating group Crv.MustTrip – Must Trip Curve								
Crv.MustTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MustTrip.Pt – Must Trip Curve Points (repeated NPt times)								
Crv.MustTrip.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.MustTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MayTrip – May Trip Curve								
Crv.MayTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MayTrip.Pt – May Trip Curve Points (repeated NPt times)								
Crv.MayTrip.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.MayTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MomCess – Momentary Cessation Curve								
Crv.MomCess.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MomCess.Pt – Mom Cessation Curve Points (repeated NPt times)								
Crv.MomCess.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	

Model 707 – DER Trip LV (DERTripLV)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Crv.MomCess.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	

Model 708 – DER Trip HV (DERTripHV)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Trip HV Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Adopt Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Adopt Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrvSet	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
Stored curve sets - Number of curve sets contained in NCrvSet - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrvSet times)								
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	
Stored curve set containing a Must Trip, May Trip, and Momentary Cessation Curve - Number of curve points contained in NPt								
Repeating group Crv.MustTrip – Must Trip Curve								
Crv.MustTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MustTrip.Pt – Must Trip Curve Points (repeated NPt times)								
Crv.MustTrip.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.MustTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MayTrip – May Trip Curve								
Crv.MayTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MayTrip.Pt – May Trip Curve Points (repeated NPt times)								
Crv.MayTrip.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.MayTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MomCess – Momentary Cessation Curve								
Crv.MomCess.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MomCess.Pt – Mom Cessation Curve Points (repeated NPt times)								
Crv.MomCess.Pt.V	Voltage Point	uint16	VNomPct	RW		5.001	DPT_Scaling	
Crv.MomCess.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	

Model 709 – DER Trip LF (DERTripLF)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Trip LF Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Adopt Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Adopt Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrvSet	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
Stored curve sets - Number of curve sets contained in NCrvSet - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrvSet times)								
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	
Stored curve set containing a Must Trip, May Trip, and Momentary Cessation Curve - Number of curve points contained in NPt								
Repeating group Crv.MustTrip – Must Trip Curve								
Crv.MustTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MustTrip.Pt – Must Trip Curve Points (repeated NPt times)								
Crv.MustTrip.Pt.Hz	Frequency Point	uint32	Hz	RW		14.033	DPT_Value_Frequency	
Crv.MustTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MayTrip – May Trip Curve								
Crv.MayTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MayTrip.Pt – May Trip Curve Points (repeated NPt times)								
Crv.MayTrip.Pt.Hz	Frequency Point	uint32	Hz	RW		14.033	DPT_Value_Frequency	
Crv.MayTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MomCess – Momentary Cessation Curve								
Crv.MomCess.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MomCess.Pt – Mom Cessation Curve Points (repeated NPt times)								
Crv.MomCess.Pt.Hz	Frequency Point	uint32	Hz	RW		14.033	DPT_Value_Frequency	
Crv.MomCess.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	

Model 710 – DER Trip HF (DERTripHF)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	

Model 710 – DER Trip HF (DERTripHF)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Ena	DER Trip HF Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Adopt Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Adopt Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrvSet	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
Stored curve sets - Number of curve sets contained in NCrvSet - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrvSet times)								
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	
Stored curve set containing a Must Trip, May Trip, and Momentary Cessation Curve - Number of curve points contained in NPt								
Repeating group Crv.MustTrip – Must Trip Curve								
Crv.MustTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MustTrip.Pt – Must Trip Curve Points (repeated NPt times)								
Crv.MustTrip.Pt.Hz	Frequency Point	uint32	Hz	RW		14.033	DPT_Value_Frequency	
Crv.MustTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MayTrip – May Trip Curve								
Crv.MayTrip.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MayTrip.Pt – May Trip Curve Points (repeated NPt times)								
Crv.MayTrip.Pt.Hz	Frequency Point	uint32	Hz	RW		14.033	DPT_Value_Frequency	
Crv.MayTrip.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
Repeating group Crv.MomCess – Momentary Cessation Curve								
Crv.MomCess.ActPt	Number Of Active Points	uint16		RW		7.001	DPT_Value_2_Ucount	
Repeating group Crv.MomCess.Pt – Mom Cessation Curve Points (repeated NPt times)								
Crv.MomCess.Pt.Hz	Frequency Point	uint32	Hz	RW		14.033	DPT_Value_Frequency	
Crv.MomCess.Pt.Tms	Time Point	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	

Model 711 – DER Frequency Droop (DERFreqDroop)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Frequency Droop Module Enable	enum16		RW	M	1.003	DPT_Enable	

Model 711 – DER Frequency Droop (DERFreqDroop)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
AdptCtlReq	Set Active Control Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	In SunSpec, AdptCtlReq is a uint16 because some devices expect the index of the control set to be written (1…NCtl).
AdptCtlRslt	Set Active Control Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NCtl	Stored Control Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
RvrtTms	Reversion Timeout	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
RvrtRem	Reversion Time Left	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
RvrtCtl	Reversion Control	uint16		RW		7.001	DPT_Value_2_Ucount	
Stored control sets - Number of control sets contained in NCtl - The first set is read-only and indicates the current settings.								
Repeating group Ctl – Stored Controls (repeated NCtl times)								
Ctl.DbOf	Over-Frequency Deadband	uint32	Hz	RW	M	14.033	DPT_Value_Frequency	
Ctl.DbUf	Under-Frequency Deadband	uint32	Hz	RW	M	14.033	DPT_Value_Frequency	
Ctl.KOf	Over-Frequency Change Ratio	uint16		RW	M	**Ad-hoc DPT**	**DPT_Value_PerUnit**	
Ctl.KUf	Under-Frequency Change Ratio	uint16		RW	M	**Ad-hoc DPT**	**DPT_Value_PerUnit**	
Ctl.RspTms	Open-Loop Response Time	uint32	Secs	RW	M	12.100	DPT_LongTimePeriod_Sec	
Ctl.PMin	Minimum Active Power	int16	Pct	RW		6.001	DPT_Percent_V8	
Ctl.ReadOnly	Control Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	

Model 712 – DER Watt-Var (DERWattVar)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
Ena	DER Watt-Var Module Enable	enum16		RW	M	1.003	DPT_Enable	
AdptCrvReq	Set Active Curve Request	uint16		RW	M	7.001	DPT_Value_2_Ucount	
AdptCrvRslt	Set Active Curve Result	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAdoptResult**	
NPt	Number Of Points	uint16		R	M	7.001	DPT_Value_2_Ucount	
NCrv	Stored Curve Count	uint16		R	M	7.001	DPT_Value_2_Ucount	
RvrtTms	Reversion Timeout	uint32	Secs	RW		12.100	DPT_LongTimePeriod_Sec	
RvrtRem	Reversion Time Left	uint32	Secs	R		12.100	DPT_LongTimePeriod_Sec	
RvrtCrv	Reversion Curve	uint16		RW		7.001	DPT_Value_2_Ucount	

Model 712 – DER Watt-Var (DERWattVar)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
Stored curve sets - Number of curve sets contained in NCrv - The first set is read-only and indicates the current settings.								
Repeating group Crv – Stored Curves (repeated NCrv times)								
Crv.ActPt	Active Points	uint16		RW	M	7.001	DPT_Value_2_Ucount	
Crv.DeptRef	Dependent Reference	enum16		RW	M	**Ad-hoc DPT**	**DPT_DER_CurveDependentRef**	
Crv.Pri	Power Priority	enum16		RW		**Ad-hoc DPT**	**DPT_DER_PowerPriority**	
Crv.ReadOnly	Curve Access	enum16		R	M	**Ad-hoc DPT**	**DPT_DER_CurveAccess**	
Stored curve sets - curve points for each stored curve - Number of curve points contained in NPt								
Repeating group Crv.Pt – Stored Curve Points (repeated NPt times)								
Crv.Pt.W	Active Power Point	int16	WMaxPct	RW		5.001	DPT_Scaling	
Crv.Pt.Var	Reactive Power Point	int16	VarPct	RW		5.001	DPT_Scaling	

Model 713 – DER Storage Capacity (DERStorageCapacity)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
WHRtg	Energy Rating	uint16	WH	R		13.010	DPT_ActiveEnergy	
WHAvail	Energy Available	uint16	WH	R		13.010	DPT_ActiveEnergy	
SoC	State of Charge	uint16	Pct	R		5.001	DPT_Scaling	SoC/SoH as 0…100 % via 5.001; if signed or >100 ranges needed, switch to 6.001.
SoH	State of Health	uint16	Pct	R		5.001	DPT_Scaling	
Sta	Status	enum16		R		**Ad-hoc DPT**	**DPT_DER_StorageStatus**	

Model 714 – DER DC Measurement (DERMeasureDC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
DC General								
PrtAlrms	Port Alarms	bitfield32		R		**Ad-hoc DPT**	**DPT_DER_DC_PortAlarmMap**	
NPrt	Number Of Ports	uint16		R		7.001	DPT_Value_2_Ucount	
DCA	DC Current	int16	A	R		14.019	DPT_Value_Electric_Current	
DCW	DC Power	int16	W	R		14.056	DPT_Value_Power	

Model 714 – DER DC Measurement (DERMeasureDC)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
DCWhInj	DC Energy Injected	uint64	Wh	R		13.010	DPT_ActiveEnergy	
DCWhAbs	DC Energy Absorbed	uint64	Wh	R		13.010	DPT_ActiveEnergy	
DC Port								
Repeating group Prt – (repeated NPrt times)								
Prt.PrtTyp	Port Type	enum16		R		**Ad-hoc DPT**	**DPT_DER_DCPortType**	
Prt.ID	Port ID	uint16		R		7.001	DPT_Value_2_Ucount	
Prt.IDStr	Port ID String	string(8)		R		16.000	DPT_String_ASCII	Trim/pad ≤14 chars.
Prt.DCA	DC Current	int16	A	R		14.019	DPT_Value_Electric_Current	
Prt.DCV	DC Voltage	uint16	V	R		14.027	DPT_Value_Electric_Potential	
Prt.DCW	DC Power	int16	W	R		14.056	DPT_Value_Power	
Prt.DCWhInj	DC Energy Injected	uint64	Wh	R		13.010	DPT_ActiveEnergy	
Prt.DCWhAbs	DC Energy Absorbed	uint64	Wh	R		13.010	DPT_ActiveEnergy	
Prt.Tmp	DC Port Temperature	int16	C	R		9.001	DPT_Value_Temp	
Prt.DCSta	DC Port Status	enum16		R		**Ad-hoc DPT**	**DPT_DER_DC_PortStatus**	
Prt.DCAlrm	DC Port Alarm	bitfield32		R		**Ad-hoc DPT**	**DPT_DER_DC_Alarms**	

Model 715 – DER Control (DERCtl)								
SunSpec point	**Label**	**Type**	**Units**	**R/W**	**M**	**KNX DPT**	**KNX DPT name**	**Notes**
ID	Model ID	uint16		R	M	7.010	DPT_PropDataType	
L	Model Length	uint16		R	M	7.010	DPT_PropDataType	
DER Controls								
LocRemCtl	Control Mode	enum16		R		**Ad-hoc DPT**	**DPT_DER_ControlMode**	
DERHb	DER Heartbeat	uint32		R		7.001	DPT_Value_2_Ucount	
ControllerHb	Controller Heartbeat	uint32		RW		7.001	DPT_Value_2_Ucount	
AlarmReset	Alarm Reset	uint16		RW		1.015	DPT_Reset	
OpCtl	Set Operation	enum16		RW		**Ad-hoc DPT**	**DPT_DER_OperationControl**	

ANNEX II – AD-HOC DATAPOINT TYPES LIST (provisional)

The following ad-hoc DPTs result from mapping the SunSpec 700-series models (Annex I). Their names and identifiers are provisional, and they are not yet part of the official list of KNX DPTs.

Ad-hoc DPT name (provisional)	Format	Notes	SunSpec models
DPT_ACWiringType	N8	1Ø / split / 3Ø	701
DPT_DER_InverterState	N8	OFF…STANDBY	701
DPT_DER_GridConnectionState	N8	DISCONNECTED / CONNECTED	701
DPT_DER_Alarms	B32	DER alarm bitfield	701
DPT_DER_Mode	B32	GRID_FOLLOWING / FORMING / PV_CLIPPED	701
DPT_Value_ReactivePower	F32	Reactive power (var)	701, 702, 704
DPT_DER_ThrottleSource	B32	MAX_W, FIXED_W, …	701
DPT_Value_Susceptance	F32	Susceptance (S)	702
DPT_DER_NormalOpCategory	N8	Grid interconnection type compliance	702
DPT_DER_AbnormalOpCategory	N8	Grid protection	702
DPT_DER_ControlModes	B32	MAX_W, VOLT_VAR, …	702
DPT_DER_IntentionalIslandingCategories	B16	INT_ISL, BLACK_START, …	702
DPT_DER_SetActivePowerMode	N8	W_MAX_PCT / WATTS	704
DPT_DER_SetReactivePowerMode	N8	W_MAX_PCT / VAR_MAX_PCT / …	704
DPT_DER_PowerPriority	N8	ACTIVE / REACTIVE / VENDOR	704, 705, 712
DPT_DER_RampRateRef	N8	A_MAX / W_MAX	704
DPT_DER_PF_Excitation	N8	OVER_EXCITED / UNDER_EXCITED	704
DPT_DER_CurveAdoptResult	N8	IN_PROGRESS / COMPLETED / FAILED	705, 706, 707, 708, 709, 710, 711, 712
DPT_DER_CurveDependentRef	N8	W_MAX_PCT / VAR_MAX_PCT / …	705, 712
DPT_DER_CurveAccess	N8	RW / R	705, 706, 707, 708, 709, 710, 711, 712
DPT_DER_VoltWattDependentRef	N8	Volt–Watt curve definition	706
DPT_Value_PerUnit	F32	Dimensionless per-unit ratio (frequency-droop change ratio)	711
DPT_DER_StorageStatus	N8	OK / WARNING / ERROR	713
DPT_DER_DC_PortAlarmMap	B32	Ports with alarm (bit per port)	714
DPT_DER_DCPortType	N8	PV / ESS / EV / INJ / ABS / BIDIR / DC_DC	714
DPT_DER_DC_PortStatus	N8	OFF / ON / WARNING / ERROR	714
DPT_DER_DC_Alarms	B32	Per-port DC fault bits	714
DPT_DER_ControlMode	N8	REMOTE / LOCAL	715
DPT_DER_OperationControl	N8	STOP / START / ENTER/EXIT_STANDBY	715

ANNEX III – AD-HOC DATAPOINT TYPES DESCRIPTION (provisional)

DPT_ACWiringType
DPT ID: 20.xxx Name: DPT_ACWiringType Format: N8 Encoding: 0 = SINGLE_PHASE 1 = SPLIT_PHASE 2 = THREE_PHASE Use: G (General) Application: DER/EV/Storage integration, electrical topology classification

DPT_DER_InverterState
DPT ID: 20.xxx Name: DPT_DER_InverterState Format: N8 Encoding: 0 = OFF 1 = SLEEPING 2 = STARTING 3 = RUNNING 4 = THROTTLED 5 = SHUTTING_DOWN 6 = FAULT 7 = STANDBY Use: G (General) Application: DER inverter behavior reporting Description: Encodes the internal operating state of the DER inverter.

DPT_DER_GridConnectionState
DPT ID: 20.xxx Name: DPT_DER_GridConnectionState Format: N8 Encoding: 0 = DISCONNECTED 1 = CONNECTED Use: G (General) Application: DER interconnection status Description: Indicates whether the DER is electrically connected to the grid.

DPT_DER_Alarms
DPT ID: 21.xxx Name: DPT_DER_Alarms Format: B32 Encoding: Bit 0 = GROUND_FAULT Bit 1 = DC_OVER_VOLT Bit 2 = AC_DISCONNECT Bit 3 = DC_DISCONNECT Bit 4 = GRID_DISCONNECT Bit 5 = CABINET_OPEN Bit 6 = MANUAL_SHUTDOWN Bit 7 = OVER_TEMP Bit 8 = OVER_FREQUENCY Bit 9 = UNDER_FREQUENCY Bit 10 = AC_OVER_VOLT Bit 11 = AC_UNDER_VOLT Bit 12 = BLOWN_STRING_FUSE Bit 13 = UNDER_TEMP Bit 14 = MEMORY_LOSS Bit 15 = HW_TEST_FAILURE Bit 16 = MANUFACTURER_ALARM Use: G (General) Application: DER diagnostics and fault analysis Description: Bitfield representation of active alarms in the DER device.

DPT_DER_Mode
DPT ID: 21.xxx Name: DPT_DER_Mode Format: B32 Encoding: Bit 0 = GRID_FOLLOWING Bit 1 = GRID_FORMING Bit 2 = PV_CLIPPED Use: G (General) Application: DER operational mode diagnostics Description: Indicates the current grid-interaction mode or curtailment status of the DER.

DPT_Value_ReactivePower
DPT ID: 14.xxx Name: DPT_Value_ReactivePower Format: F32 Encoding: IEEE 754 single-precision floating-point Use: G (General) Application: DER diagnostics, grid interface, and energy management systems Description: Indicates the reactive power of a device in volt-ampere reactive (var). Encoded as a 32-bit float following the IEEE 754 standard. Supports both inductive (positive) and capacitive (negative) reactive power values, suitable for real-time monitoring of inverters, meters, or other DER components.

DPT_DER_ThrottleSource
DPT ID: 21.xxx Name: DPT_DER_ThrottleSource Format: B32 Encoding (bitmask): Bit 0 = MAX_W (Maximum active power limit) Bit 1 = FIXED_W (Fixed active power limit) Bit 2 = FIXED_VAR (Fixed reactive power injection/absorption) Bit 3 = FIXED_PF (Fixed power factor control) Bit 4 = VOLT_VAR (Volt-Var control active) Bit 5 = FREQ_WATT (Frequency-Watt control active) Bit 6 = DYN_REACT_CURR (Dynamic reactive current limit) Bit 7 = LVRT (Low Voltage Ride Through active) Bit 8 = HVRT (High Voltage Ride Through active) Bit 9 = WATT_VAR (Watt-Var control active) Bit 10 = VOLT_WATT (Volt-Watt control active) Bit 11 = SCHEDULED (Scheduled control) Bit 12 = LFRT (Low Frequency Ride Through active) Bit 13 = HFRT (High Frequency Ride Through active) Bit 14 = DERATED (DER in derated mode) Use: G (General) Application: DER operational status diagnostics Comment: Bitfield indicating all currently active DER throttling sources.

DPT_Value_Susceptance
DPT ID: 14.xxx Name: DPT_Value_Susceptance Format: F32 Encoding: IEEE 754 single-precision floating-point Use: G (General) Application: DER diagnostics, grid modeling, and power system control Description: Indicates the reactive susceptance of a device or circuit in siemens (S). Encoded as a 32-bit float using the IEEE 754 standard. Positive values represent capacitive susceptance; negative values represent inductive susceptance. Suitable for modeling grid-forming and grid-following DER behavior, reactive power compensation, and dynamic impedance profiles.

DPT_DER_NormalOpCategory
DPT ID: 20.xxx Name: DPT_DER_NormalOpCategory Format: N8 Encoding: 0 = CAT_A 1 = CAT_B Use: G (General) Application: DER grid interconnection type compliance Description: Indicates the normal operating category of the DER device as defined in IEEE 1547-2018.

DPT_DER_AbnormalOpCategory
DPT ID: 20.xxx Name: DPT_DER_AbnormalOpCategory Format: N8 Encoding: 0 = CAT_1 1 = CAT_2 2 = CAT_3 Use: G (General) Application: DER grid protection and disturbance ride-through configuration Description: Encodes the abnormal operating performance category of a DER, aligned with IEEE 1547-2018.

DPT_DER_ControlModes
DPT ID: 21.xxx Name: DPT_DER_ControlModes Format: B32 Encoding: Bit 0 = MAX_W Bit 1 = FIXED_W Bit 2 = FIXED_VAR Bit 3 = FIXED_PF Bit 4 = VOLT_VAR Bit 5 = FREQ_WATT Bit 6 = DYN_REACT_CURR Bit 7 = LV_TRIP Bit 8 = HV_TRIP Bit 9 = WATT_VAR Bit 10 = VOLT_WATT Bit 11 = SCHEDULED Bit 12 = LF_TRIP Bit 13 = HF_TRIP Use: G (General) Application: DER control function support declaration Description: Bitfield indicating which DER control functions are supported or enabled, as per IEEE 1547-2018.

DPT_DER_IntentionalIslandingCategories
DPT ID: 21.xxx Name: DPT_DER_IntentionalIslandingCategories Format: B16 Encoding: Bit 0 = UNCATEGORIZED Bit 1 = INT_ISL_CAPABLE Bit 2 = BLACK_START_CAPABLE Bit 3 = ISOCH_CAPABLE Use: G (General) Application: DER islanding capability configuration Description: Indicates which intentional islanding capabilities are present in the DER, useful for resilience and black-start planning.

DPT_DER_SetActivePowerMode
DPT ID: 20.xxx Name: DPT_DER_SetActivePowerMode Format: N8 Encoding: 0 = W_MAX_PCT (Active power command is % of maximum active power; use WSetPct) 1 = WATTS (Active power command is absolute watts; use WSet) Use: G (General) Application: DER active-power control; selects how the gateway interprets active-power setpoints. Description: Enumerates the basis for active-power commands. Value 0 applies percent-of-maximum semantics; value 1 applies absolute-watt semantics. Other codes reserved.

DPT_DER_SetReactivePowerMode
DPT ID: 20.xxx Name: DPT_DER_SetReactivePowerMode Format: N8 Encoding: 0 = W_MAX_PCT (Reactive power as % of maximum active power) 1 = VAR_MAX_PCT (Reactive power as % of maximum reactive power) 2 = VAR_AVAIL_PCT (Reactive power as % of currently available reactive power) 3 = VA_MAX_PCT (Reactive power as % of maximum apparent power) 4 = VARS (Reactive power in absolute vars; use VarSet) Use: G (General) Application: DER reactive-power control; selects how the gateway interprets reactive-power setpoints. Description: Enumerates the reference used for reactive-power commands. Percent-based modes expect VarSetPct; VARS expects VarSet in engineering units. Other codes reserved.

DPT_DER_PowerPriority
DPT ID: 20.xxx Name: DPT_DER_PowerPriority Format: N8 Encoding: 0 = ACTIVE (Prioritize meeting active-power targets) 1 = REACTIVE (Prioritize meeting reactive-power targets) 2 = VENDOR (Vendor-specific priority behavior) Use: G (General) Application: Coordination of simultaneous active/reactive objectives in DER control. Description: Signals which power component should take precedence when constraints conflict. Intended for supervisory control logic and vendor-specific strategies. Other codes reserved.

DPT_DER_RampRateRef
DPT ID: 20.xxx Name: DPT_DER_RampRateRef Format: N8 Encoding: 0 = A_MAX (Ramp rate expressed as % of maximum current per second) 1 = W_MAX (Ramp rate expressed as % of maximum active power per second) Use: G (General) Application: Interpretation of WRmp/VarRmp values on KNX (sent as 5.001 %), defining the reference basis for %/s. Description: Selects the reference quantity used when applying ramp-rate commands. Works together with WRmp / VarRmp; the KNX value is an integer percent per second relative to the chosen reference. Other codes reserved.

DPT_DER_PF_Excitation
DPT ID: 20.xxx Name: DPT_DER_PF_Excitation Format: N8 Encoding: 0 = OVER_EXCITED (leading power factor, capacitive; VAR injection to grid) 1 = UNDER_EXCITED (lagging power factor, inductive; VAR absorption from grid) Use: G (General) Application: DER power-factor control; pairs with PF setpoint fields to indicate excitation (leading/lagging) when commanding inverter operation. Description: Enumerates the excitation state used with power-factor commands. OVER_EXCITED selects leading (capacitive) operation; UNDER_EXCITED selects lagging (inductive) operation. Used alongside 14.057 DPT_Value_Power_Factor to unambiguously convey PF orientation for DER inverters.

DPT_DER_CurveAdoptResult
DPT ID: 20.xxx Name: DPT_DER_CurveAdoptResult Format: N8 Encoding: 0 = IN_PROGRESS (Curve update in progress) 1 = COMPLETED (Curve update completed successfully) 2 = FAILED (Curve update failed) Use: G (General) Application: DER Volt-Var curve management (Model 705); reports the outcome of an Adopt Curve request. Description: Enumerates the result state of a curve adoption/update cycle so HMIs and automation can react accordingly (e.g., show progress, confirm success, or surface errors). Other codes reserved.

DPT_DER_CurveDependentRef
DPT ID: 20.xxx Name: DPT_DER_CurveDependentRef Format: N8 Encoding: 0 = W_MAX_PCT (Percent of maximum active power) 1 = VAR_MAX_PCT (Percent of maximum reactive power) 2 = VAR_AVAL_PCT (Percent of currently available reactive power) 3 = VA_MAX_PCT (Percent of maximum apparent power) Use: G (General) Application: Volt-Var curve definition; selects the reference against which Var points are expressed. Description: Defines the basis used to interpret each Var point in a Volt-Var curve. Percent values on KNX (e.g., 5.001) are relative to this reference. Other codes reserved.

DPT_DER_CurveAccess
DPT ID: 20.xxx Name: DPT_DER_CurveAccess Format: N8 Encoding: 0 = RW (Curve is read–write) 1 = R (Curve is read-only) Use: G (General) Application: Curve set capability/status exposure for commissioning tools and supervisory control. Description: Indicates whether a stored curve set may be edited over KNX or is fixed/locked by the device or policy. Other codes reserved.

DPT_DER_VoltWattDependentRef
DPT ID: 20.xxx Name: DPT_DER_VoltWattDependentRef Format: N8 Encoding: 0 = W_MAX_PCT (Percent of maximum active power) 1 = W_AVAL_PCT (Percent of currently available active power) Use: G (General) Application: Volt–Watt curve definition (Model 706); selects the reference against which W points are expressed. Description: Defines the basis used to interpret each W point in a Volt–Watt curve. Percent values on KNX (e.g., 5.001) are relative to this reference. Other codes reserved.

DPT_Value_PerUnit
DPT ID: 14.xxx Name: DPT_Value_PerUnit Format: F32 Encoding: IEEE 754 single-precision floating-point Use: G (General) Application: DER frequency-droop control (SunSpec model 711, KOf / KUf) Description: Dimensionless per-unit ratio, encoded as a 32-bit float using the IEEE 754 standard. Used for the over- and under-frequency change ratios of the frequency-droop function, which SunSpec expresses as a scaled integer without unit.

DPT_DER_StorageStatus
DPT ID: 20.xxx Name: DPT_DER_StorageStatus Format: N8 Encoding: 0 = OK 1 = WARNING 2 = ERROR Use: G (General) Application: DER storage health/availability indication for HMIs and BMS alarms. Description: Encodes the overall status of the storage subsystem. Values map directly from the SunSpec Sta field.

DPT_DER_DC_PortAlarmMap
DPT ID: 21.xxx Name: DPT_DER_DC_PortAlarmMap Format: B32 Encoding: Bit i = 1 if DC port i has ≥1 active alarm (i = 0..31) Use: G Application: Fleet/array alarm summary for DC ports.

DPT_DER_DCPortType
DPT ID: 20.xxx Name: DPT_DER_DCPortType Format: N8 Encoding: 0=PV, 1=ESS, 2=EV, 3=INJ, 4=ABS, 5=BIDIR, 6=DC_DC Use: G Application: Classify DC port source/sink behavior.

DPT_DER_DC_PortStatus
DPT ID: 20.xxx Name: DPT_DER_DC_PortStatus Format: N8 Encoding: 0=OFF, 1=ON, 2=WARNING, 3=ERROR Use: G Application: HMI/BMS state for a DC port.

DPT_DER_DC_Alarms
DPT ID: 21.xxx Name: DPT_DER_DC_Alarms Format: B32 Encoding (bits): 0=GROUND_FAULT, 1=INPUT_OVER_VOLTAGE, 3=DC_DISCONNECT, 5=CABINET_OPEN, 6=MANUAL_SHUTDOWN, 7=OVER_TEMP, 12=BLOWN_FUSE, 13=UNDER_TEMP, 14=MEMORY_LOSS, 15=ARC_DETECTION, 19=RESERVED, 20=TEST_FAILED, 21=INPUT_UNDER_VOLTAGE, 22=INPUT_OVER_CURRENT (Other bits reserved) Use: G Application: Detailed DC port fault diagnostics.

DPT_DER_ControlMode
DPT ID: 20.xxx Name: DPT_DER_ControlMode Format: N8 Encoding: 0 = REMOTE (Remote control) 1 = LOCAL (Local/manual control) Use: G (General) Application: Selects whether DER accepts remote commands or is in local maintenance mode. Description: Mirrors the SunSpec LocRemCtl enumeration for inverter control authority.

DPT_DER_OperationControl
DPT ID: 20.xxx Name: DPT_DER_OperationControl Format: N8 Encoding: 0 = STOP 1 = START 2 = ENTER_STANDBY 3 = EXIT_STANDBY Use: G (General) Application: High-level PCS operation commands for DER start/stop and standby transitions. Description: Provides explicit operation mode commands mapped from SunSpec OpCtl.