



APPLICATION NOTES



DEIF hybrid controller compatibility

Photovoltaic, weather, and battery systems

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1. Introduction

1.1 DEIF's hybrid controllers

The DEIF hybrid controllers allow you to combine renewable energy with other power sources.

Controller	Function	Documentation
AGC 150 Hybrid	Integrate photovoltaic power in simple applications	www.deif.com/documentation/agc-150-hybrid
ASC-4 Solar	Integrate photovoltaic power in a wide range of applications	www.deif.com/documentation/asc-4
ASC-4 Battery	Integrate battery energy and storage	www.deif.com/documentation/asc-4-battery

1.2 Compatibility and compliance

DEIF hybrid controllers are compatible with photovoltaic and battery systems from a wide range of manufacturers.

SunSpec compliance

All DEIF hybrid controllers are compliant with the SunSpec standards (see sunspec.org). DEIF controllers are therefore compatible with new inverters that use the generic SunSpec protocol.

Testing

Many PV inverter makers and battery system makers use the same protocol for a wide range of their products. New PV inverters and battery systems often comply with the older protocol. If a specific inverter or battery management system is not listed here, but the maker is listed, there is a good chance that the DEIF controller is compatible.

If your PV inverter or Battery system is not listed, DEIF can help to confirm compliance using the Modbus protocol documentation.

Implementing new protocols

Since new photovoltaic and battery systems are launched every year, DEIF developers continuously implement new protocols. If your system is not listed, please contact DEIF. We can work with you to quickly implement the required protocol.

1.3 Software versions

This document is valid for the following software versions.

Controller	SW version
AGC 150 Hybrid	1.07
ASC-4 Solar	4.17
ASC-4 Battery	4.17

2. Photovoltaic

2.1 ASC-4 Solar and AGC 150 Hybrid

2.1.1 Compatible PV systems

The standard DEIF PV system interface is Modbus RTU (RS-485). When a TCP/IP interface is required, DEIF can supply and support an external converter.

COC = Certificate of compliance

ABB	Interface	ASC PV protocol (7561)	COC
Pro33	Modbus RTU (RS-485)	ABB PRO	
PVS 50/60	Modbus RTU (RS-485)	SunSpec Generic	
PVS 100/200	Modbus RTU (RS-485)	SunSpec Generic	
PVS 175	Modbus RTU (RS-485)	SunSpec Generic	
PVS 800	Modbus RTU (RS-485)	ABB PVS800	
Trio 5.8-8.0 (ID restricted)	Modbus RTU (RS-485)	ABB TRIO	
Trio 20.0	Modbus RTU (RS-485)	ABB TRIO	x
Trio 27.6	Modbus RTU (RS-485)	ABB TRIO	x
Trio 50.0	Modbus RTU (RS-485)	ABB Trio 50	

Chint	Interface	ASC PV protocol (7561)	COC
SCA14-36 KTL	Modbus RTU (RS-485)	Chint Power 14/36kW	
SCA50-60 KTL	Modbus RTU (RS-485)	Chint Power 50/60kW	

DEIF open	Interface	ASC PV protocol (7561)	COC
Inverters using the DEIF open protocol	Modbus RTU (RS-485)	DEIF Open	

Delta	Interface	ASC PV protocol (7561)	COC
RPI M6A	Modbus RTU (RS-485)	Delta RPI	
RPI M10A	Modbus RTU (RS-485)	Delta RPI	
RPI M15A (unicast only)	Modbus RTU (RS-485)	Delta RPI	
RPI M20A (unicast only)	Modbus RTU (RS-485)	Delta RPI	
RPI M30A	Modbus RTU (RS-485)	Delta RPI	
RPI M50A	Modbus RTU (RS-485)	Delta RPI	
RPI M88H	Modbus RTU (RS-485)	Delta RPI M88H	

EVVO	Interface	ASC PV protocol (7561)	COC
50-70kW	Modbus RTU (RS-485)	EVVO	
1110TL/1600TL/2200TL/3000TL	Modbus RTU (RS-485)	EVVO	

Fronius	Interface	ASC PV protocol (7561)*	COC
Data manager	Modbus RTU (RS-485)	SunSpec Generic	
Eco	Modbus RTU (RS-485)	SunSpec Generic	
Symo	Modbus RTU (RS-485)	SunSpec Generic	

NOTE * Older Fronius systems may need to use the **Fronius SunSpec** protocol.

Gamesa	Interface	ASC PV protocol (7561)	COC
E-series	Modbus TCP	Gamesa E-series	

Ginlong Solis	Interface	ASC PV protocol (7561)	COC
25 K (unicast only)	Modbus RTU (RS-485)	Ginlong Solis	

Goodwe	Interface	ASC PV protocol (7561)	COC
GW4000-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW5000-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW6000-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW8000-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW9000-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW10KN-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW12K-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW15K-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW17K-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW20K-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW25K-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW30K-DT	Modbus RTU (RS-485)	Goodwe DT series	x
GW50K-MT	Modbus RTU (RS-485)	Goodwe DT series	x
GW60K-MT	Modbus RTU (RS-485)	Goodwe MT series	x
GW70KHV-MT	Modbus RTU (RS-485)	Goodwe MT series	x

Growatt	Interface	ASC PV protocol (7561)	COC
10000UE/12000UE/18000UE/ 20000UE	Modbus RTU (RS-485)	Growatt	

HiQ	Interface	ASC PV protocol (7561)	COC
Truestring	Modbus RTU (RS-485)	HiQ solar truestring	

Huawei	Interface	ASC PV protocol (7561)	COC
Smartlogger	Modbus TCP	Huawei smartlogger	
SUN2000 8-28KTL	Modbus RTU (RS-485)	Huawei SUN2000 8-28KTL	
SUN2000 33-40KTL	Modbus RTU (RS-485)	Huawei SUN2000 33-40KTL	
SUN2000 50-60KTL	Modbus RTU (RS-485)	Huawei SUN2000 50-60KTL	

Huawei	Interface	ASC PV protocol (7561)	COC
SUN2000 55-60KTL	Modbus RTU (RS-485)	Huawei SUN2000 55-60KTL	
SUN2000 90-105	Modbus RTU (RS-485)	Huawei SUN2000 90-105KTL	
SUN2000 100-125KTL	Modbus RTU (RS-485)	Huawei SUN2000 100-125M0-M2	

Ingeteam	Interface	ASC PV protocol (7561)	COC
SUN 10 TL	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 10 TL M	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 15 TL	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 15 TL M	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 20 TL	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 20 TL M	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 33 TL	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 33 TL M	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 40 TL M480	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 100 TL (360V)	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 100 TL (380V)	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 100 TL (400V)	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 100 TL (420V)	Modbus RTU (RS-485)	Ingeteam 3Play	x
SUN 100 TL (440V)	Modbus RTU (RS-485)	Ingeteam 3Play	x

INVT	Interface	ASC PV protocol (7561)	COC
iMars BG	Modbus RTU (RS-485)	INVT BG series	

Kaco	Interface	ASC PV protocol (7561)	COC
Blue Planet 5.0-10.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Blue Planet 15.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Blue Planet 20.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Blue Planet 50.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Blue Planet 87.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Blue Planet 150.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Powador 18.0-20.0 TL3	Modbus UDP/TCP	SunSpec Generic	x
Powador 60.0 TL3	Modbus UDP/TCP	SunSpec Generic	x

Kstar	Interface	ASC PV protocol (7561)	COC
KSG1-60	Modbus RTU (RS-485)	Kstar	

Refusol	Interface	ASC PV protocol (7561)	COC
8-23K (kW only)	Modbus RTU (RS-485)	SunSpec Generic	
100K	Modbus RTU (RS-485)	SunSpec Generic	

Schneider	Interface	ASC PV protocol (7561)	COC
CL 20E	Modbus RTU (RS-485)	Schnieder Conext CL 20/25	x
CL 25E	Modbus RTU (RS-485)	Schnieder Conext CL 20/25	x
CL 25 NA	Modbus RTU (RS-485)	Schnieder Conext CL 20/25	x
CL 36E	Modbus RTU (RS-485)	SE Conext CL 60	x
CL 60 A/E	Modbus RTU (RS-485)	SE Conext CL 60	x

SMA	Interface	ASC PV protocol (7561)	COC
Cluster controller	Modbus TCP	SMA cluster controller	
Core1	Modbus UDP/TCP	SunSpec Generic	
FSC	Modbus TCP	SMA FSC	
SHP 75	Modbus TCP	SunSpec Generic	
SMA inverter with firmware v2.82	Modbus RTU (RS-485)	SMA SunSpec v2.82	
Solid Q50-60	Modbus RTU (RS-485)	SMA Solid-Q 50	
Solid-Q PRO 60	Modbus RTU (RS-485)	SMA Solid-Q PRO 60	
STP 5000-12000 TL	Modbus UDP/TCP	SunSpec Generic	
STP 20000-25000 TL	Modbus UDP/TCP	SunSpec Generic	
STP 60	Modbus UDP/TCP	SunSpec Generic	

SolarEdge	Interface	ASC PV protocol (7561)	COC
SE15-27.6K	Modbus RTU (RS-485)	SolarEdge	

Sungrow	Interface	ASC PV protocol (7561)	COC
COM100E	Modbus UDP/TCP	SunGrow Logger 1000	
SunGrow Series	Modbus RTU (RS-485)	SunGrow SG series	

Vacon	Interface	ASC PV protocol (7561)	COC
Vacon 8000	Modbus RTU (RS-485)	Vacon8000	

2.2 Compatible power meters

ASC Solar supported power meters

Meter	P	Q	Inputs
ABB SACE Emax 2 protocol	x	x	2
Diris A40	x	x	-
EM6400	x	x	-
EDMI Genius	x	x	-
EDS MMCT3	x	x	-
iEM3000	x	-	-
iEM6400	x	x	-
Mavolog Pro	x	x	-
MIB7000C	x	x	-
MIC-2	x	x	-
MIC4002	x	x	2
MIC4224	x	x	4
MTR-3	x	x	-
Multis L40	x	x	-
PM5560	x	x	-

3. Weather stations

3.1 ASC-4 Solar and AGC 150 Hybrid

3.1.1 Compatible weather stations and forecast systems

Weather stations

Maker	Type	Interface	ASC Weather prot. (7661)
ABB	TRIO VSN800	Modbus RTU (RS-485)	ABBTRIO VSN800
Delta	GHI sensor Modbus	Modbus RTU (RS-485)	Delta Ohm

Forecast systems

Maker	Type	Interface	ASC Forecast prot. (7631)
Reuniwatt	SkyInSight	Modbus TCP	Reuniwatt SkyInSight
SteadySun	SteadyEye	Modbus TCP	SteadySun SteadyEye

4. Battery

4.1 ASC-4 Battery

4.1.1 Compatible battery energy storage systems

System types

- BCU = Battery control unit
- BMS = Battery management system
- PCS = Power conversion system

COC = Certificate of compliance

ESS = Energy storage system

ESS protocol (allows BCU, or BCU and PCS control)

Maker	Type	Interface	ASC ESS (7561) protocol	System	COC	Comments
Any	Modbus protocol for implementation	Modbus RTU (RS-485) or Modbus TCP	DEIF Generic	PCS or BCU		See the ASC-4 Modbus master User manual for more information.
Any	BESS using the DEIF open protocol	Modbus RTU (RS-485)	DEIF Open			
ABB	PQ PluS	Modbus TCP		PCS		Awaiting test.
Aggreko	Y.Cube	Modbus TCP	Aggreko Y-Cube	BCU		
ATESS-Growatt	HPS, PCS and PBD series	Modbus RTU (RS-485)	ATESS Growatt	BCU		
Ausar	Ausar MAE	Modbus RTU (RS-485)	Ausar MAE v2	PCS ESS		
Danfoss Vacon	Danfoss NXP	Modbus TCP		PCS		Under development - mapping needed.
Delta	PCS100	Modbus RTU (RS-485)		PCS		
FIMER	PVS980-58BC	Modbus RTU (RS-485)	FIMER PVS980-58BC	PCS		
GPSS	GPSS-240-020K-3P-Cxx	Modbus TCP	GPSS	BCU	x	
H2	Enerflow	Modbus TCP	Enerflow	BCU	x	
Qinous	Qinous ESS	Modbus TCP	Qinous	BCU	x	
Sinexcel	PWS1-50K to 250K Series	Modbus RTU (RS-485)	SinExcel	PCS		
SMA	Sunny Island	Modbus TCP	SMA Sunny Island	PCS		Awaiting PQ mode-test. Only one cluster, not possible to control multi-cluster box.

Maker	Type	Interface	ASC ESS (7561) protocol	System	COC	Comments
SunGrow	SC XXX (Upper Computer Communication Protocol for PCS (V1.2.1.1))	Modbus RTU (RS-485)	SunGrow PCS	PCS		
Tesla	Tesla Powerpack	Modbus TCP	Tesla Powerpack	BCU		

BMS protocol (allows BMS control)

Maker	Type	Interface	ASC BMS (7681) protocol	System	COC	Comments
Any	Modbus protocol for implementation	Modbus RTU (RS-485) or Modbus TCP	DEIF Generic	BMS		See the ASC-4 Modbus master User manual for more information.
CATL	CATL BMS systems	Modbus TCP	CATL BMS	BMS		
LFP	LiFe Po	Modbus RTU (RS-485)	LFP	BMS		
Narada	NESP and NPFC series	Modbus RTU (RS-485)	Narada BMS	BMS		
PolynTech	PowerCube H1/H2	Modbus RTU (RS-485)	PowerCube H1/H2	BMS		
Samsung	E1	Modbus RTU (RS-485)	Samsung BMS	BMS		