Solar Modules HSM

Hybrid Solar DC scalable outdoor enclosure with 2 mounted outdoors 1ph inverters for residential installations – US

Codes		
E2104O-T40DSU	E2104O-T50DSU	E2104O-T80DSU
E2106O-T40DSU	E2106O-T50DSU	E2106O-T80DSU
E2107O-T40DSU	E2107O-T50DSU	E2107O-T80DSU

Fegen Solar Modules SM series are All-in-One, Plug & Play, Outdoor, Scalable enclosures that incorporate all solar thermal and solar electric distribution gear for buildings in one device.

-No need of a conventional indoor boiler room
-No on-site labor cost
-Immediate start-up
-No responsibility conflicts
-Easy control and maintenance
-Scalable for infinite combinations

- **Tight single door dimensions**
- **40-80 gallons water storage**
- **Integrated heating element**
- **Simple DC pump design**
- **Solar back up system for redundancy**
- **Defrost system for reliability**
- **Solar pool gear option (P extension coded)**
- **Cost efficient mounted outdoors 1ph 4-7kWdC twin inverters**

CABIN GENERAL CHARACTERISTICS

	Thermal Part
Type	RITTAL TS 8
External dimensions W x H x D (front view)	800 x 2000 x 800 mm / 31,50 x 78,74 x 31,50 inch
Mounting plate	Width: 699 mm, Height: 1896 mm
Weight/pack	137 kg
Material	Sheet steel
Cold / Hot Supply - Brass	1 ¼ inch
Color	RAL 7035
Protection category IP to IEC 60 529	IP 55
Doors	1
Light	Auto door power On/Off - 600 lumens
Scalability	Unlimited
Protection	Over-temperature, Anti-freeze control
Approvals	Bureau Veritas, CSA, TÜV, DNV-GL, Lloyds Register of Shipping, Russian Maritime Register of Shipping, UL + C-UL
Certificates	EAC,IK-Code, Protection category
Declarations	Declaration of conformity, Manufacturer's declaration
Certification	SRCC, Solar Keymark, CE

CABIN LIGHTING SYSTEM-TECHNICAL SPECIFICATIONS

	General Data
Type	RITTAL LED system light
Material	Light body: Extruded aluminium Light cover: Polycarbonate (halogen-free) Light ends: PC-ABS (halogen-free)
Color	Enclosure: RAL 7016
Protection category IP to IEC 60 529	IP 20
Dimensions	Width: 337 mm, Height: 55 mm, Depth: 23 mm
Rated operating voltage	100 V - 240 V, 1~, 50 Hz/60 Hz
Operating temperature	Operation (environment): -20°C...+55°C
Power consumption	7 W
Luminous flux	600 lm
Light colour	4000 K (neutral white)
Protection category	II (all-insulated)
Weight/pack	0.35 kg
Approvals	CCC, ENEC
Certificates	EAC

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SOLAR TANK CHARACTERISTICS	T40	T50	T60
General Data			
Type		Sammler SV	
Solar tank capacity	160 lt / 40 gal	200 lt / 50 gal	300 lt / 80 gal
External dimensions W x H	580 x 1058 mm 22,83 x 41,6 inch	580 x 1292 mm 22,83 x 50,9 inch	580 x 1735 mm 22,83 x 68,3 inch
Weight	67 kg / 235 lb	82 kg / 235 lb	107 kg / 235 lb
Number of boilers		1	
Max pressure primary circuit		3 bar	
Max pressure secondary circuit		3 bar	
Electric Resistance		1.50 – 4.00 KW (UL Ready) - not included	
Anti-corrosion protection		2 x magnesium anodes	
Certification		SRCC, Solar Keymark, CE	

DC CIRCULATION PUMP

General Data	
Type	DC Solar Pump
Power	10W (6-24 Vdc)
Max Capacities	22 Lpm / 6 Gpm
Max heads	3,2 m / 10,5 ft
Suitable fluids	Water / Glycol
Maximum working temperature	110 °C / 230 °F
Max. working pressure	10 bar
Number of DC Pumps	1
Protection	Over-temperature, overload, Over voltage, dry running protection
Temperature Sensors	
Platinum RTD type	1,000 ohm
Collector sensor working range	-58 - 355 ^{0}F (-50 - 180 ^{0}C)
Tank sensor working range	15 - 175 ^{0}F (-10 - 80 ^{0}C)
Length of collector black cable	60 in (1.5 m)
Length of tank sensor gray cable	95 in (2.5 m)
Glycol (recommended type)	
Type	DOWFROST HD
Recommended temperature range	-46°C...163°C
Freezing Point	-33.5 °C
Boiling Point @ 1 bar	105.6 °C
Freeze protection temperature	-51 °C
Burst protection temperature	-73 °C
Weight % Propylene Glycol	94
Weight % performance additives	6
Specific gravity (15 °C)	1.053 - 1.062
pH of Solution	9.5 - 10.5
Reserve alkalinity	15.0 ml

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TECHNICAL DATA AND TYPES

Fimer type code	UNO-DM-3.3-TL-PLUS-US-Q	UNO-DM-4.6-TL-PLUS-US-Q	UNO-DM-5.0-TL-PLUS-US-Q
General specifications			
Rated grid AC voltage (V_{acr})	208 V 240 V	208 V 240 V	208 V 240 V
Nameplate Apparent Power (S_{max})	3300 VA 3300 VA	4600 VA 4600 VA	5000 VA 5000 VA
Nameplate Output Active Power (P_{max} @ cosφ=1)	3300 W 3300 W	4600 W 4600 W	5000 W 5000 W
P_{RATED}: Output Active Power @V_{ACr} and cosφ=±0,9	2700 W 3000 W	3780 W 4140 W	4118 W 4500 W
Input side (DC)			
Number of independent MPPT channels		2	
Maximum usable power for each channel	2000 W	3000 W	3500 W
Absolute maximum voltage (V_{max})	600 V	600 V	600 V
Start-up voltage (V_{start})	200 V (Adj. 120-350)	200 V (Adj. 120-350)	200 V (Adj. 120-350)
Full power MPPT voltage range with parallel MPPT configuration at P_{acr}	160-530 V 170-530 V	140-530 V 150 - 530 V	155-480 V 170-480 V
Operating MPPT voltage range	0.7*V_{start} - 580 V (≥ 90)	0.7*V_{start} - 580 V (≥ 90)	0.7*V_{start} - 580 V (≥ 90)
Maximum usable current per channel	10 A	16 A	19 (CH1) - 11.5 (CH2)
Maximum current (Idcmax)	20 A	32 A	30,5 A
Maximum short circuit current per channel		25 A	
Number of wire landing terminals		2 pairs, capable of connecting two parallel strings	
Array wiring termination		Terminal block, pressure clamp, AWG20-8	
Output side			
Grid connection type	1Φ/2W Split-Φ/3W	1Φ/2W Split-Φ/3W	1Φ/2W Split-Φ/3W
Adjustable voltage range (V_{min}-V_{max})	183-228 V 211-264 V	183-228 V 211-264 V	183-228 V 211-264 V
Grid frequency	60 Hz	60 Hz	60 Hz
Adjustable grid frequency range	50-64 Hz	50-64 Hz	50-64 Hz
Maximum current (Iac,max)	14,5 A	20 A	22 A
Power factor	>0.995, adj. +/-0.8	>0.995, adj. +/-0.8	>0.995, adj. +/-0.8
Total harmonic distortion at rated power	<2%	<2%	<2%
Contributory fault current	16 A	22 A	24 A
Grid wiring termination type		Terminal block, pressure clamp, AWG20-6	
Input protections			
Reverse polarity protection		Yes, from limited current source	
Over-voltage protection type		Varistor	
PV array ground fault detection		Pre start-up RISO and dynamic GFDI	
Output protections			
Anti-islanding protection		Meets UL1741 / IEEE1547 requirements	
Over-voltage protection type		Varistor, 2 (L1 - L2 / L1 - G)	
Maximum AC OCPD rating	20 A	25 A	30 A
Efficiency			
Maximum efficiency	97%	97%	97.4%
CEC efficiency	96.5% 96.5%	96.5% 96.5%	96.5% 97%
Operating performance			
Stand-by consumption		<8 W_{RMS}	
Nighttime consumption		<0.6 W_{RMS}	
Auxiliary Output			
Isolated Auxiliary Power Supply [1)]		24 Vdc, 0.4 A max	

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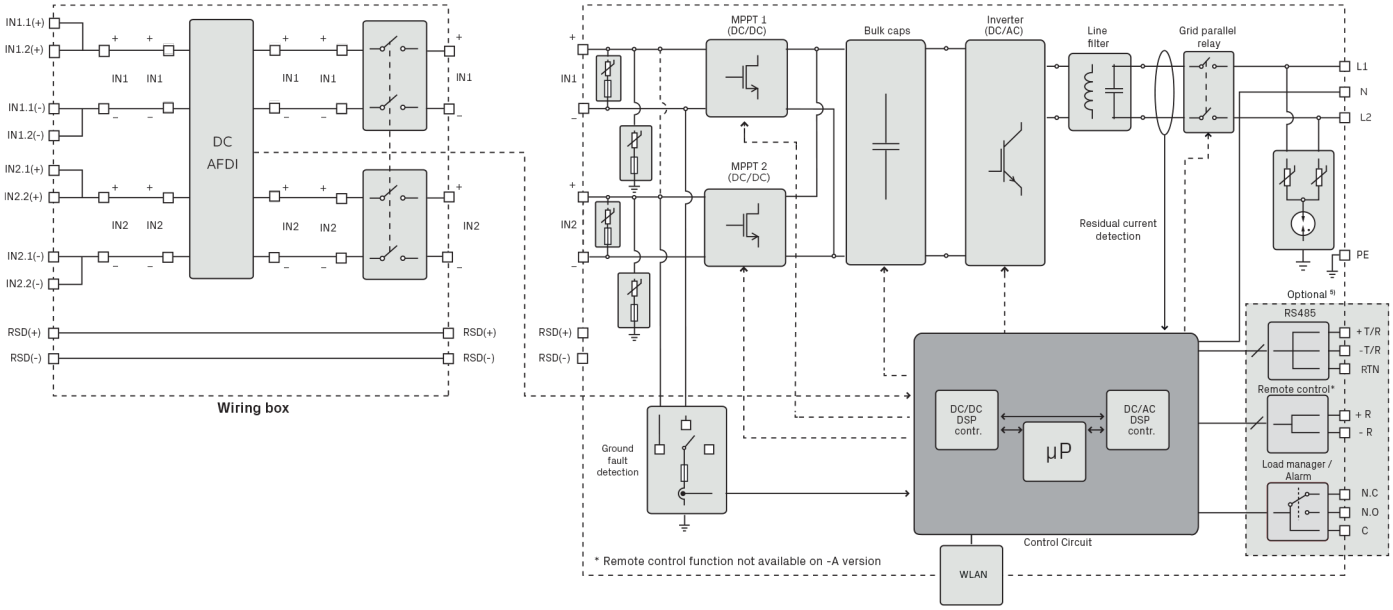
Fimer Type code	UNO-DM-3.3-TL-PLUS-US-Q	UNO-DM-4.6-TL-PLUS-US-Q	UNO-DM-5.0-TL-PLUS-US-Q
Embedded communication			
Embedded communication interface	Wireless [2]		
Embedded communication protocol	ModBus TCP (SunSpec)		
Commissioning tool	Web User Interface		
Monitoring	Aurora Vision cloud (Plant Portfolio Manager, Plant Viewer, Energy Viewer)		
Optional board UNO-DM-COM kit			
Optional communication interface	RS485 (use with meter for dynamic feed-in control), Alarm/Load manager relay, Remote ON/OFF		
Optional communication protocol	ModBus RTU (SunSpec), Aurora Protocol		
Advanced functionalities provided	Dynamic feed-in control, Load manager relay		
Optional board UNO-DM-PLUS Ethernet COM kit			
Optional communication interface	Ethernet, RS485, Alarm/Load manager relay, Remote ON/OFF		
Optional communication protocol	ModBus TCP (SunSpec), ModBus RTU (SunSpec), Aurora Protocol		
Environmental			
Ambient air operating temperature range	-25...+60°C /-13...140°F (derating above 50°C/122°F)	-25...+60°C /-13...140°F (derating above 45°C/113°F)	
Relative humidity	0-100% RH condensing		
Acoustic noise emission level	< 50 db (A) @1m		
Maximum operating altitude without de-rating	6560ft (2000m)		
Mechanical specifications			
Enclosure rating	Type 4X		
Cooling	Natural convection		
Dimension (H x W x D)	34 x 16.4 x 8.7 in (863 x 418 x 222 mm) [3]		
Weight	35.3 lb (16 kg) [3]		
Shipping weight	46lb (20,7kg) [3]		
Mounting system	Wall bracket		
Conduit connections	Bottom: Markings for (2) Concentric KOs 1", 3/4" and (2) KOs 1/2" Sides: Markings for Concentric KOs 1", 3/4" [3]		
DC switch rating	600 V, 23 A @ 600 V, 38 A @ 500 V and 45 A @ 350 V		
Safety			
Isolation level	Transformerless (floating array)		
Safety and EMC standard	UL1741, IEEE1547.1, CSA-C22.2 N. 107.1-01, UL1998 UL 1699B-2018, FCC Part 15 Class B		
Grid standard	IEC/EN 62109-1, IEC/EN 62109-2, AS/NZS 4777.2, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12		
Safety approval	CTUVUS		
Available models			
Model with DC switch, wiring box, AFD, RSD supply output	UNO-DM-3.3-TL-PLUS-USSB-RA-Q	UNO-DM-4.6-TL-PLUS-USSB-RA-Q	UNO-DM-5.0-TL-PLUS-US-SBRA-QU



UNO-DM-4.0/4.6/5.0-TL-PLUS-Q string inverter block diagram

Models using other branded solar thermal or solar electric gear upon demand.