Solar Modules HSM

Hybrid Solar DC scalable outdoor enclosure with mounted outdoors 3ph inverter for residential and small commercial installations – EU

Codes			
E1313O-T160DSE	E1313O-T200DSE	E1313O-T300DSE	E1313O-T500DSE
E1316O-T160DSE	E1316O-T200DSE	E1316O-T300DSE	E1316O-T500DSE

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**
- **160-500 liters 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 3ph**
- **13-16kWdC inverter**

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 W x H	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

Solar Modules HSM

Hybrid Solar DC scalable outdoor enclosure with mounted outdoors 3ph inverter for residential and small commercial installations – EU

SOLAR TANK CHARACTERISTICS	T160	T200	T300	T500
General Data				
Type		Sammler SV		TESY EV
Solar tank capacity	160 lt / 40 gal	200 lt / 50 gal	300 lt / 80 gal	500 lt / 132 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	750 x 1674 mm 29,5 x 66 inch
Weight	67 kg / 235 lb	82 kg / 235 lb	107 kg / 235 lb	145 kg / 320 lb
Number of boilers		1		
Max pressure primary circuit		3 bar		8 bar
Max pressure secondary circuit		3 bar		6 bar
Electric Resistance		1.50 – 4.00 KW (UL Ready) - not included		
Anti-corrosion protection		2 x magnesium anodes		
Certification		SRCC, Solar Keymark, CE		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

Solar Modules HSM

Hybrid Solar DC scalable outdoor enclosure with mounted outdoors 3ph inverter for residential and small commercial installations – EU

TECHNICAL DATA AND TYPES

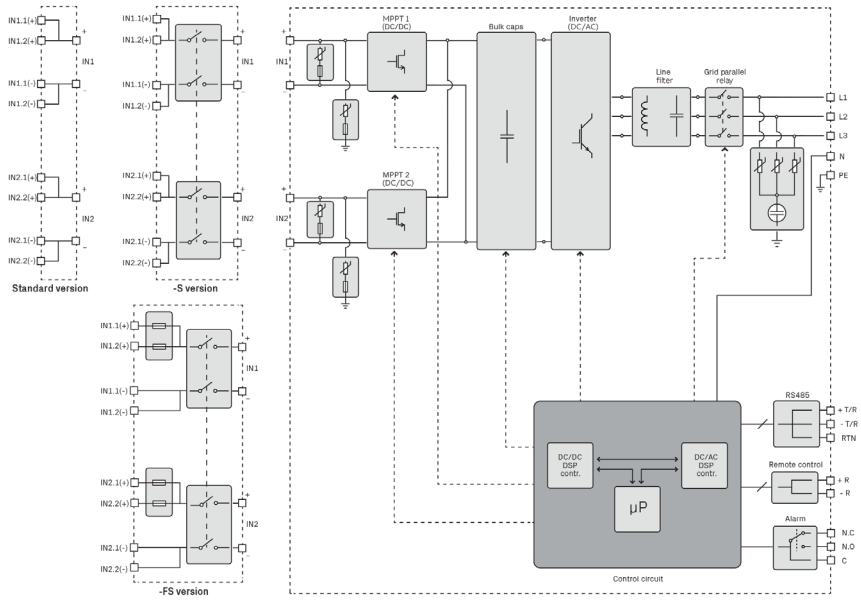
Fimer type code	PVI-10.0-TL-OUTD	PVI-12.5-TL-OUTD
Input side		
Absolute maximum DC input voltage ($V_{max,abs}$)	900 V	
Start-up DC input voltage (V_{start})	360 V (adj. 250...500 V)	
Operating DC input voltage range (V_{dcmin}..Vd_{cmax})	0.7 x Vstart..850 V (min 200 V)	
Rated DC input voltage (V_{dcr})	580 V	
Rated DC input power (P_{dcr})	10300 W	12800 W
Number of independent MPPT	2	
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	6500 W	8000 W
DC input voltage range with parallel configuration of MPPT at P_{acr}	300...750 V	360...750 V
DC power limitation with parallel configuration of MPPT	Linear derating from max to null [750 V≤VMPPT≤850 V]	
DC power limitation for each MPPT with independent configuration of MPPT at P_{acr}, max unbalance example	6500 W [380 V≤VMPPT≤750 V] the other channel: Pdcr-6500 W [225 V≤VMPPT≤750 V]	8000 W [445 V≤VMPPT≤750 V] the other channel: Pdcr-8000 W [270 V≤VMPPT≤750 V]
Maximum DC input current (Idcmax) / for each MPPT (IMPPTmax)	34.0 A / 17.0 A	36.0 A / 18.0 A
Maximum input short circuit current for each MPPT	22.0 A	
Number of DC input pairs for each MPPT	2	
DC connection type [1]	PV quick fit connector [1]	
Input protection		
Reverse polarity protection	Inverter protection only, from limited current source	
Input over voltage protection for each MPPT-varistor	Yes	
Photovoltaic array isolation control	According to local standard	
DC switch rating for each MPPT (version with DC switch)	25 A / 1000 V	
Fuse rating (versions with fuses)	15 A / 1000 V	
Output side		
AC grid connection type	Three-phase 3W+PE or 4W+PE	
Rated AC power (P_{acr} @cosφ=1)	10000 W	12500 W
Maximum AC power (P_{acmax} @cosφ=1)	11000W [2]	13800W [3]
Maximum apparent power (S_{max})	11500 VA	13800 VA
Rated AC grid voltage ($V_{ac,r}$)	400 V	
AC voltage range [2]	320...480 V [4]	
Maximum AC output current ($I_{ac,max}$)	16.6 A	20.0 A
Contributory fault current	19.0 A	22.0 A
Rated output frequency (f_r) [3]	50/60 Hz	
Output frequency range (f_{min}...f_{max}) [3]	47...53 Hz / 57...63 Hz 3)	
Nominal power factor and adjustable range	> 0.995, adj. ± 0.9 with Pacr =10.0 kW, ± 0.8 with max 11.5 kVA	> 0.995, adj. ± 0.9 with Pacr =12.5 kW, ± 0.8 with max 13.8 kVA
Total current harmonic distortion	< 2%	
AC connection type	Screw terminal block, cable gland M40	
Output protection		
Anti-islanding protection	According to local standard	
Maximum external AC overcurrent protection	25 A	
Output overvoltage protection - varistor	3 plus gas arrester	
Operating performance		
Maximum efficiency (η_{max})	97.8%	
Weighted efficiency (EURO/CEC)	97.1% / -	97.2% / -
Feed in power threshold	30.0 W	
Night consumption	< 1.0 W	

Solar Modules HSM

Hybrid Solar DC scalable outdoor enclosure with mounted outdoors 3ph inverter for residential and small commercial installations – EU

User interface

Fimer Type code	**PVI-10.0-TL-OUTD**	**PVI-12.5-TL-OUTD**
Communication		
Wired local monitoring	PVI-USB-RS232_485 (opt.)	
Remote monitoring	VSN300 Wifi Logger Card (opt.), VSN700 Data Logger (opt.)	
Wireless local monitoring	VSN300 Wifi Logger Card (opt.)	
User interface	16 characters x 2 lines LCD display	
Environmental		
Ambient temperature range	-25...+60°C (-13...+140°F) with derating above 55°C (131°F)	-25...+60°C (-13...140°F) with derating above 50°C (122°F)
Relative humidity	0...100 % condensing	
Sound pressure level, typical	50 dBA @ 1 m	
Maximum operating altitude without derating	2000 m / 6560 ft	
Physical		
Environmental protection rating	IP 65	
Cooling	Natural	
Dimension (H x W x D)	716 mm x 645 mm x 224 mm / 28.2" x 25.4" x 8.8"	
Weight	< 41.0 kg / 90.4 lbs	
Mounting system	Wall bracket	
Safety		
Isolation level	Transformerless	
Marking	CE (50 Hz only), RCM	
Safety and EMC standard	EN 50178, IEC/EN 62109-1, IEC/EN 62109-2, AS/NZS 3100, AS/NZS 60950.1, EN 61000-6-2, EN 61000-6-3, EN 61000-3-11, EN 61000-3-12	
Grid standard (check your sales channel for availability)	CEI 0-21, CEI 0-16, DIN V VDE V 0126-1-1, VDE-AR-N 4105, G59/3, C10/11, EN 50438 (not for all national appendices), RD 1699, RD 413, RD 661, P.O. 12.3, AS/NZS 4777, IEC 61727, IEC 62116, BDEW, MEA, NRS 097-2-1, VFR 2014	
Available products variants		
Standard	PVI-10.0-TL-OUTD	PVI-12.5-TL-OUTD
With DC switch	PVI-10.0-TL-OUTD-S	PVI-12.5-TL-OUTD-S
	PVI-10.0-TL-OUTD-FS	PVI-12.5-TL-OUTD-FS



PVI-10.0/12.5-TL-OUTD string inverter block diagram

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

