All about Broadband Power Solution Vol.3

ESTECH INTERNATIONAL

Broadband Power Solution

SUN Series
power supply solution

WWW.ES-TECH.CO.KR

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ES-TECH INTERNATIONAL is a dedicated HFC(Hybrid Fiber Coaxial) technology com-pany. Delivering proactive and proven solutions and services that help networks around the world, ES-TECH INTERNATIONAL provides comprehensive power solutions for HFC and cable/connectivity solution for A/Vbroadcasting market. Our power solutions are designed to features that deliver power over network consistently to reduce risk of interruption with a technically improved UPS(Uninterruptable power supplies), and help businesses achieve operational efficiencies and satisfaction of customers.ES-TECH INTERNATIONAL's comprehensive solutions, which are designed for both A/V and broadcasting fields, improve the manageability, availability and performance of signals.

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HISTORY 2002-2012

2012
Acquired CE certification for SUN UPS Series

2008 ~2010
Developing SUN/MOON Series Cable/Broadband UPS
Developing STS 〈Static Transfer Switch〉
Developing Ground Mount Enclosure
Certification Research Institute 〈KOITA〉
Certification INNOBIZ

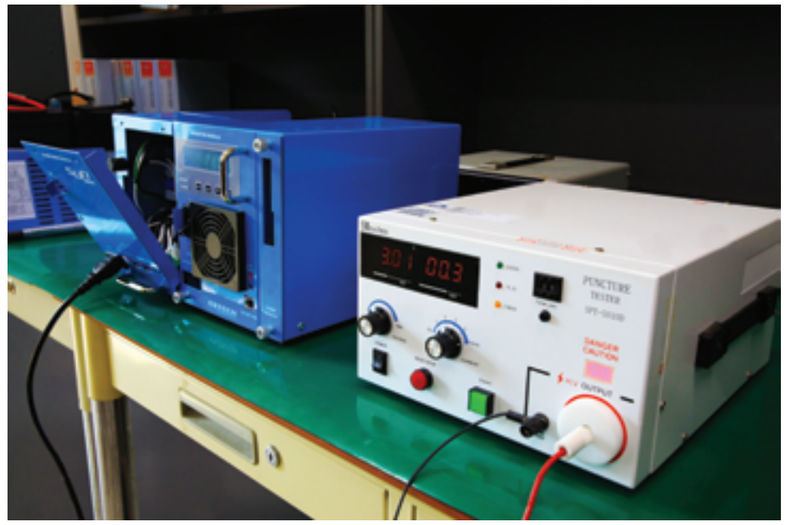
2007
Certification R&D Lab.
ISO 9001:2000 Certification
Certification MAINBIZ
certification INNOBIZ

2006 ~2002
Developing RackMount UPS
Developing APD 〈auto power supply〉
Developing Cable/Broadband UPS/PS Series
〈Uninterruptible power supply, Non-standby power supply〉
Establishment "ES-TEHC/INTERNATIONA, IN

System Stability

ES-TECH use a certified components for the product quality.

Whenever ES-TECH makes a new product (Module and Enclosure), we test the environment test under the field condition. It is for guarantee the system stability.



Surge Test

A purpose of the surge test is to check that appliance is properly designed to protect electrical devices from voltage spikes and a surge protector attempts to limit the voltage supplied to an electric device by either blocking or by shorting to ground any unwanted voltages above a safe threshold.

Chamber Test

A Chamber testing is to test the effects of specified environmental conditions on industrial products, operating condition and endurance in a certain circumstance can be evaluated with this test.

Amplifier load Test

Amplifier Load testing is performed to determine a system'sbehavior under both normal and anticipated peak load conditions. It helps to identify the maximum operating capacity of an application as well as any bottlenecks and determine which element is causing degradation.

Input voltage variation Test

Input voltage variation testing evaluates that input voltage variations may affect output voltage, and its stability under variation of supplying input power conditions.

Output load capacity Test

Output load capacity testing is a form of deliberately intense or thorough testing used to determine the stability of a given system or entity. It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results.

PART.1

SUN series

ES-TECH INTERNATIONAL has a rich history of developing innovative network products designed to capture every last drop of detail from your requirements. ES-TECH' s SUN series is developed to cover HFC networks, meeting all of your needs with compact design and low power consumption design. SUN series deliver highly stabled power to your system. SUN Series Features 3 types of user selectable output power at 63/75/90VAC. Optional communication module being compatible with HMS-022 enables online monitoring operation working status. LCD display provides users with convenient recognition of operating status. An inverter module applied air-cooling circuit and hot-swap design realized superb power factor at 0.9 and high efficiency at over 90%. Ability to supply stable output power is realized by ferro-resonance . Applied AVR providefunction helps stable power. Optimized battery performance is improved by a temperature compen-sated charging function. CE approved (LVD EN62040-1:2008, IEC62040_1A,EMC EN62040-2:2006) Compact design for space-saving and convenient handling is an optimal solution in cell-division application.

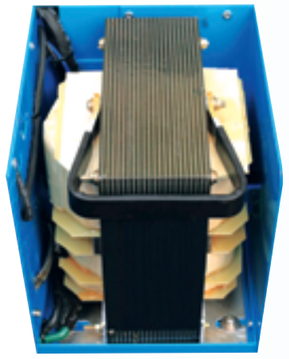
MOON series

MOON series is designed to offer power constantly in case of black-out to always secure your system safely , astonishingly low distortion. At its heart lies our own proprietary transformer and AVR function which has been refined and enhanced since its inception in the SUN series, allowing efficiency in operating power consumption and stable power supply. MOON Series Features 3 types of user selectable output power at 63/75/90VAC. Optional communication module being compatible with HMS-022 enables online monitoring operation working status. LCD display provides users with convenient recognition of operating status. An inverter module applied air-cooling circuit and hot-swap design realized high stability in operation. Applied AVR function helps provide stable power. Optimized battery performance is improved by a temperature compensated charging function.Compact design for space-saving and convenient handling is an optimal solution in cell-division application.

ESM series

Designed to provide a variable output source in 63/75/87VAC for a use in various circumstances. Online monitoring is available by using a communication module comparable with HMS-022. FND display module is applied on the front for monitoring. Separated module based design as control, inverter and bypass modules offers flexibility in repairing in an event of disorder. Applied AVR function helps provide stable power. Optimized battery perfor-mance is improved by a temperature compensated charging function.

SUN Series Module



Transformer Module

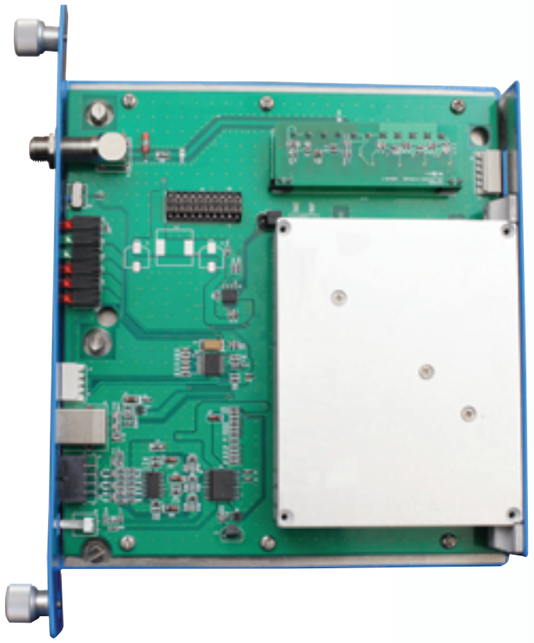
Transformer Module can be worked by Non-Standby Power Supply independently.

If an inverter module can't work system work as non-standby mode automatically.

Inverter Module

Inverter Module is installed, SUN unit is worked by Standby Power Supply.

That is, Transformer and Inverter modules are needed to work UPS system.



NMS Module (Option)

Communication Module provide a remote monitoring solution.

HMS Monitor : Interfaces the embedded or external transponders complying with the SCTE HMS-022 protocol using a single wire harness.

Legacy Monitor : Monitor Interfaces the legacy analog transponders.

SUN Series Cable/Broadband UPS Power Supply

FEATURES

- Cable/Broadband UPS Module
- Quasi-square output waveform
- Miniaturization and low operation noise.
- High efficiency transformer.
- LCD smart display for system monitoring.
- Integrated Auto-recovery function from short and output interrupt.
- LED Indicator for voltage status.
- Easy accessible front panel connection.
- Damage prevent by impulse current from equipments like ONU, TDA.
- Voltage Stabilization by ferroresonant type transformer.
- Optional "NMS" module.
- Compatibility with ES-TECH enclosure series.

Part Numbering System

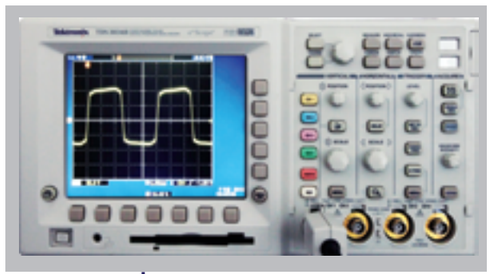
SUN Quasi-square wave Cable/Broadband UPS (Standby Power Supply)		24	5	K12 Output Power (VA) H40 = 400VA K12 = 1,200VA H60 = 600VA K13 = 1,350VA H90 = 900VA K20 = 2,000VA		M
Model	Mazimum Output Power (VA)	Input Voltage (VAC)	Input Frequency (Hz)	Output Voltage (VAC)	Output Current (A)	Battery Voltage (VDC)
SUN-245-H40M	400	240	50	63/75/90	6.3/5.3/4.4	36
SUN-245-H40H	400	240	50	63/75/90	6.3/5.3/4.4	48
SUN-245-H60M	600	240	50	63/75/90	9.5/8/6.66	36
SUN-245-H60H	600	240	50	63/75/90	9.5/8/6.66	48
SUN-245-H90M	900	240	50	63/75/90	14.2/12/10	36
SUN-245-H90H	900	240	50	63/75/90	14.2/12/10	48
SUN-245-K12M	1,200	240	50	63/75/90	19/16/13.3	36
SUN-245-K12H	1,200	240	50	63/75/90	19/16/13.3	48
SUN-245-K13M	1,350	240	50	63/75/90	21.4/18/15	36
SUN-245-K13H	1,350	240	50	63/75/90	21.4/18/15	48
SUN-245-K20M	2,000	240	50	63/75/90	31.7/26.6/22.2	36
SUN-245-K20H	2,000	240	50	63/75/90	31.7/26.6/22.2	48
SUN-225-H60M	600	220	50	63/75/90	9.5/8/6.66	36
SUN-225-H60H	600	220	50	63/75/90	9.5/8/6.66	48
⋮	⋮	⋮	⋮	⋮	⋮	⋮

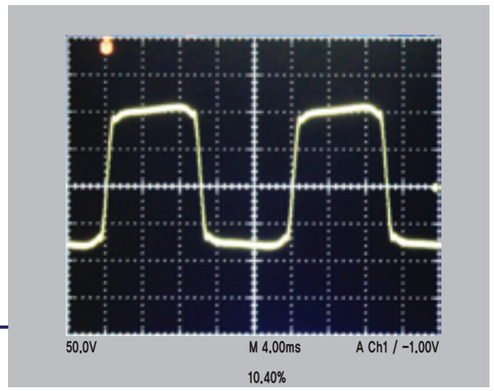
SUN-245-K12M *(Ordering Information Number)*

All products follow the part numbering system
The specification can be customized by customer requirements

QUASI-SQUARE WAVE IS

Ferroresonant transformers are a special type of laminated trans-former which provides a regulated output at a margin of ±5%





(Quasi-square wave waveform)

General Specification

Input	Phase	Single (2P + GND)	
	Power Factor	>0.90 at full load	
	Voltage	± 15%	
	Frequency	± 3%	
Output	Phase	Single (2P + GND)	
	Voltage	63 / 75 / 90 Vac	Selectable
	Output Waveform	Quasi-square wave	
	Voltage Regulation	± 5%	
	Frequency Stability	± 0.05% inverter mode 50/60Hz normal mode	
	Short Circuit Current	150% of maximum current rating	
	Transfer Characteristics	Uninterrupted output	
	Efficiency	Over 90% Line mode	After charge
		Over 85% Inverter mode	
Connection	Input	SEIZURE CONNECTOR	
	Output	SEIZURE CONNECTOR?	
Dimension	Dimension	600/900/1.200VA : 320 (w)× 220 (H) x 320 (D) mm 1.350/2.000VA : 350 (w)× 250 (H) x 350 (D) mm	This product are divided into two sizes, depending on the capacity
	Weight	Max.75 Kg	
Environment	Temperature	-20℃ - 60℃ (Operation)	
	Relative humidity	0 - 95% (Non-condensing)	
	Noise	Within 43 dB	
Option 1		NMS module and management software	
Option 2		PIM/N+1 module provides two programmable outputs or dual outputs from a single SUN power supply for redundancy in critical application.	

* This specification is subject to change without notice.

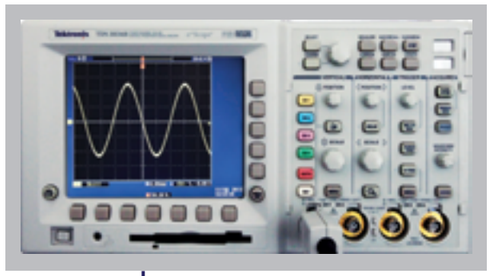
MOON Series Cable/Broadband UPS Power Supply

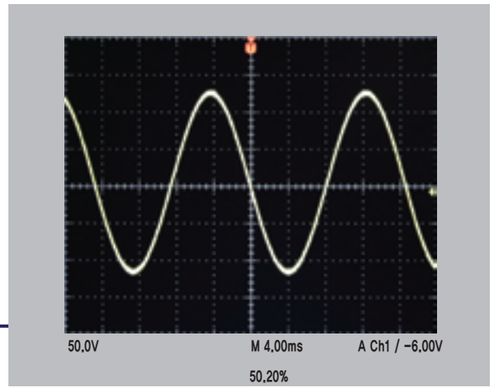
FEATURES

- Cable/Broadband UPS Module
- Sine output waveform
- Miniaturization and low operation noise.
- High efficiency transformer.
- LCD smart display for system monitoring.
- Integrated Auto-recovery function from short and output interrupt.
- LED Indicator for voltage status.
- Easy accessible front panel connection.
- Damage prevent by impulse current from equipments like ONU, TBA.
- Optional "NMS" module.
- Compatibility with ES-TECH enclosure series.

SINE WAVE IS

Sine Wave power is the latest technology after Quasi Square Wave and it is the ideal solution for SMPS.





(Sine wave waveform)

Part Numbering System

MOON Sine wave Cable/Broadband UPS (Standby Power Supply)		24	5	K12 Output Power (VA) H40 = 400VA K12 = 1,200VA H60 = 600VA K13 = 1,350VA H90 = 900VA K20 = 2,000VA		M
Model	**Mazimum Output Power (VA)**	**Input Voltage (VAC)**	**Input Frequency (Hz)**	**Output Voltage (VAC)**	**Output Current (A)**	**Battery Voltage (VDC)**
MOON-245-H40M	400	240	50	63/75/90	6.3/5.3/4.4	36
MOON-245-H40H	400	240	50	63/75/90	6.3/5.3/4.4	48
MOON-245-H60M	600	240	50	63/75/90	9.5/8/6.66	36
MOON-245-H60H	600	240	50	63/75/90	9.5/8/6.66	48
MOON-245-H90M	900	240	50	63/75/90	14.2/12/10	36
MOON-245-H90H	900	240	50	63/75/90	14.2/12/10	48
MOON-245-K12M	1,200	240	50	63/75/90	19/16/13.3	36
MOON-245-K12H	1,200	240	50	63/75/90	19/16/13.3	48
MOON-245-K13M	1,350	240	50	63/75/90	21.4/18/15	36
MOON-245-K13H	1,350	240	50	63/75/90	21.4/18/15	48
MOON-245-K20M	2,000	240	50	63/75/90	31.7/26.6/22.2	36
MOON-245-K20H	2,000	240	50	63/75/90	31.7/26.6/22.2	48
MOON-225-H60M	600	220	50	63/75/90	9.5/8/6.66	36
MOON-225-H60H	600	220	50	63/75/90	9.5/8/6.66	48
⋮	⋮	⋮	⋮	⋮	⋮	⋮

MOON-245-K12M *(Ordering Information Number)*

All products follow the part numbering system
The specification can be customized by customer requirement

General Specification

Input	Phase	Single (2P + GND)	
	Voltage	± 15%	
	Frequency	± 3Hz	
Output	Phase	Single (2P + GND)	
	Voltage	63 / 75 / 87 Vac	
	Output Waveform	Sine wave	Selectable
	Shorten switching time	4m sec typical	
	Voltage Regulation	± 5%	
	Frequency Stability	± 0.05% inverter mode 50/60Hz normal mode	
	Short Circuit Current	150% of maximum current rating	
	Efficiency	Over 90% Line mode	
		Over 85% Inverter mode	After charge
Connection	Input	SEIZURE CONNECTOR	
	Output	SEIZURE CONNECTOR?	
Dimension	Dimension	600/900/1,200VA : 320 (w)× 220 (H) x 320 (D) mm 1,350/2,000VA : 350 (w)× 250 (H) x 350 (D) mm	This product are divided into two sizes, depending on the capacity
	Weight	Max.75 Kg	
Environment	Temperature	-20℃ - 60℃(Operation)	
	Relative humidity	0 - 95% (Non-condensing)	
	Noise	Within 43 dB	
Option 1		NMS module and management software	
Option 2		PIM/N+1 module provides two programmable outputs or dual outputs from a single SUN power supply for redundancy in critical application.	

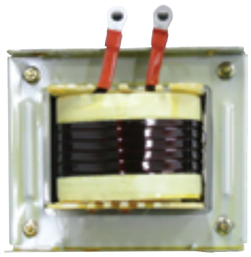
* This specification is subject to change without notice.

ESM Series Built-in type

Inverter Module

Controller Module

NMS (Option)



Two EI type transformer
(Inverter/Output)

Batteries (30Ah ~ 65Ah)

Circuit Breaker (Option)

Terminal/ports

Spare Terminal/Ports

ESM Series Cable/Broadband UPS Power Supply Built-in type

FEATURES

- Cable/Broadband UPS : Built-in type
- True Sine output waveform
- Include overload and overvoltage protection function
- LED smart display for system monitoring
- Low operation noise and heat, high efficiency
- Intelligent AVR in Inverter and Controller module
- Replacement Inverter module
- Controller module and Batteries without output interrupt by By-Pass function

Part Numbering System

ESM		24	5	H90		A	W
Built-in Type Sine waveform				Output Power (VA) H60 =600VA K12 =1,200VA H90 =900VA K13 =1,350VA			
Model	Mazimum Output Power (VA)	Input Voltage (VAC)	Input Frequency (Hz)	Output Voltage (VAC)	Output Current (A)	Enclosure Type	WIDE & LIGHT
ESM-245-H90A	900	240	50	63/75/87	14.2/12/10	Aluminum	WIDE
ESM-245-H90E	900	240	50	63/75/87	14.2/12/10	EZI Steel	LIGHT
ESM-245-K12A	1,200	240	50	63/75/87	19/16/13.3	Aluminum	WIDE
ESM-245-K12E	1,200	240	50	63/75/87	19/16/13.3	EZI Steel	LIGHT
ESM-245-K13A	1,350	240	50	63/75/87	21.4/18/15	Aluminum	WODE
ESM-245-K13E	1,350	240	50	63/75/87	21.4/18/15	EZI Steel	LIGHT
ESM-225-H90A	900	220	50	63/75/87	14.2/12/10	Aluminum	WIDE
ESM-225-H90E	900	220	50	63/75/87	14.2/12/10	EZI Steel	LIGHT
ESM-225-K12A	1,200	220	50	63/75/87	19/16/13.3	Aluminum	WIDE
ESM-225-K12E	1,200	220	50	63/75/87	19/16/13.3	EZI Steel	LIGHT
ESM-225-K13A	1,350	220	50	63/75/87	21.4/18/15	Aluminum	WIDE
ESM-225-K13E	1,350	220	50	63/75/87	21.4/18/15	EZI Steel	LIGHT
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

ESM-245-H90AW *(Ordering Information Number)*

All products follow the part numbering system
The specification can be customized by customer requirement

MODEL TYPE

LIGHT TYPE

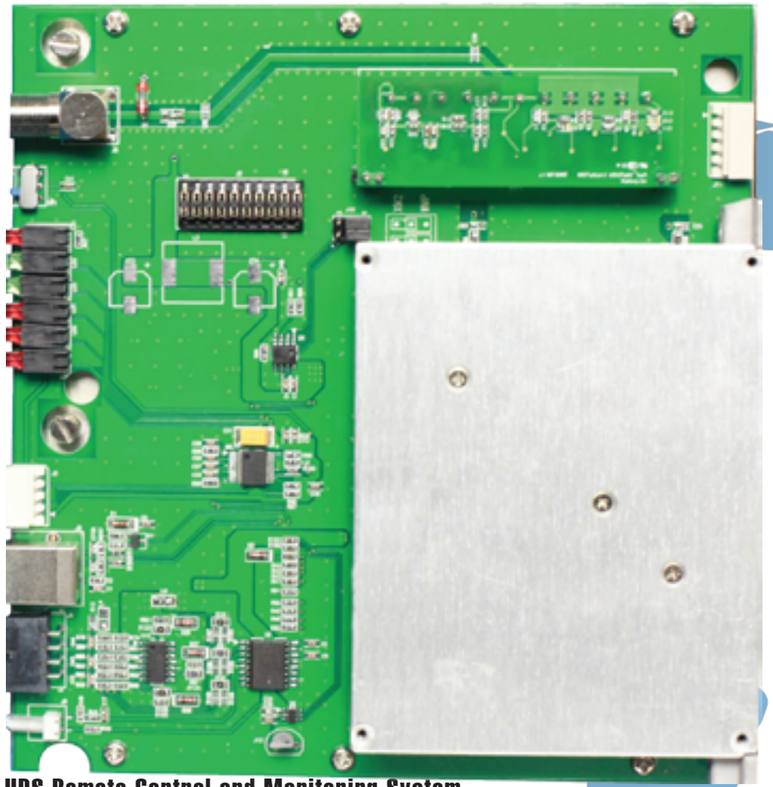
WIDE TYPE

General Specification

Input	Phase	Single (2P + GND)	
Output	Phase	Single (2P + GND)	
	Voltage	63 / 75 / 87 VAC	
	Output Waveform	TRUE SINE WAVE	Selectable
	Shorten switching time	4m sec typical	
	Synchronism	Shorten switching with Input / Output sync.	
	Voltage change rate	± 5 % (Common)	
		± 2 % (Backup)	
	Efficiency	Over 90% (Common 100% Load)	After charge
Battery	Backup Time	600VA / > 50min 900VA / > 30min 1,200VA / > 25min 1,350VA / > 20min	
	Charging time	Within 12 hours (over 90% charge)	
	Voltage	36 V. (12V 35 Ah × 3 EA) / W : 36 V. (12V 60 Ah × 3 EA)	
Connection	Input	SEIZURE CONNECTOR	
	Output	SEIZURE CONNECTOR	
Dimension	Dimension	400 (w)× 660 (H) x 440 (D) mm / W: 570 (w)× 305 (H) x 535 (D) mm	
	Weight	AL = Max. 75Kg .EZI Steel = Max. 87kg / W: AL = Max. 98Kg . EZI Steel = Max. 127kg	
Environment	Temperature	-20℃ - 60℃ (Operation)	
	Relative humidity	0 – 95% (Non-condensing)	
	Noise	Within 43 dB	
Option 1		i-ELB	
Option 2		NMS module and management software	
Option 3		UPS supporter for ground mount	

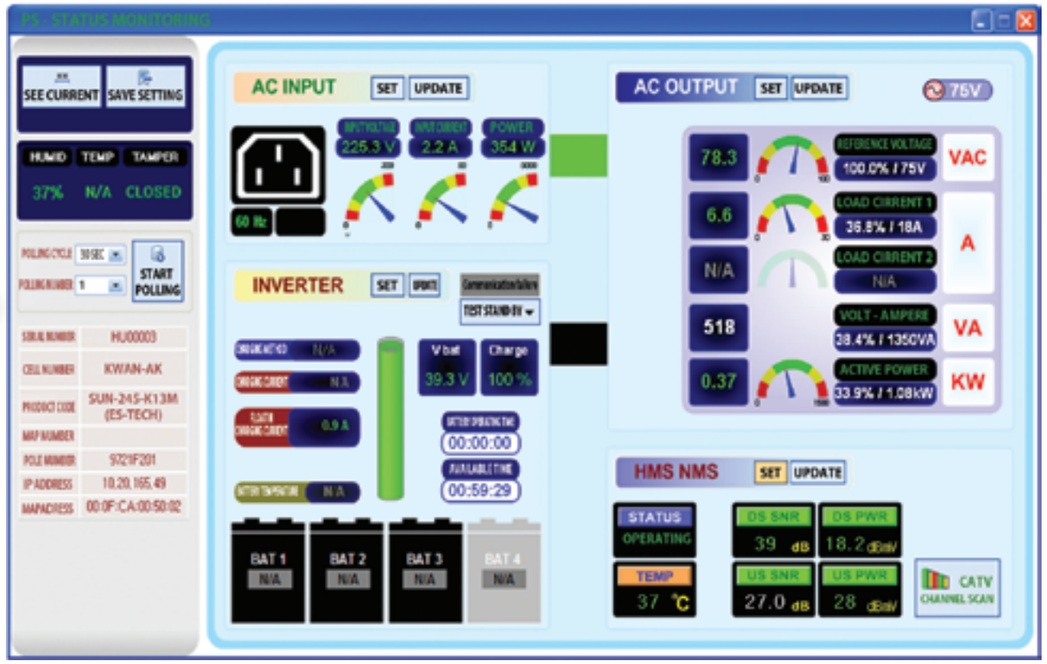
* This specification is subject to change without notice.

NMS UPS Network Status monitoring Solution



UPS Remote Control and Monitoring System.

Docsis® power supply Monitoring

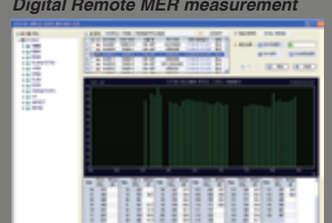


UPS operation monitoring
UPS output voltage
Battery voltage and charge unit output voltage
General Alarm status check
UPS door open/close check
Inverter output alarm status check
UPS output current check
Test/Reset command function

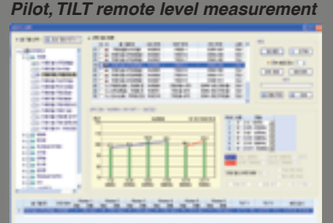
Input voltage check
Input current check
Cable modem status check
Collected information sending by Polling signal
Collected information sending by trap signal
UPS control by user
System temperature monitoring
Power condition and surge protection function

Ingress noise remote control

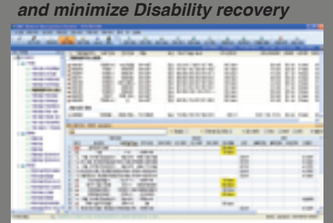
Digital Remote MER measurement



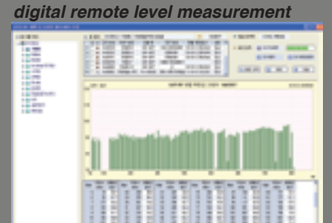
Pilot, TILT remote level measurement



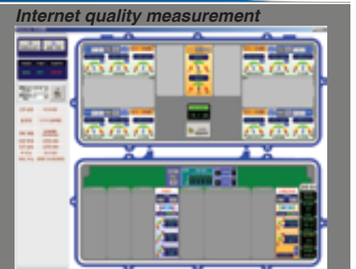
Real-time alarm, and minimize Disability recovery



All channels digital remote level measurement



Internet quality measurement

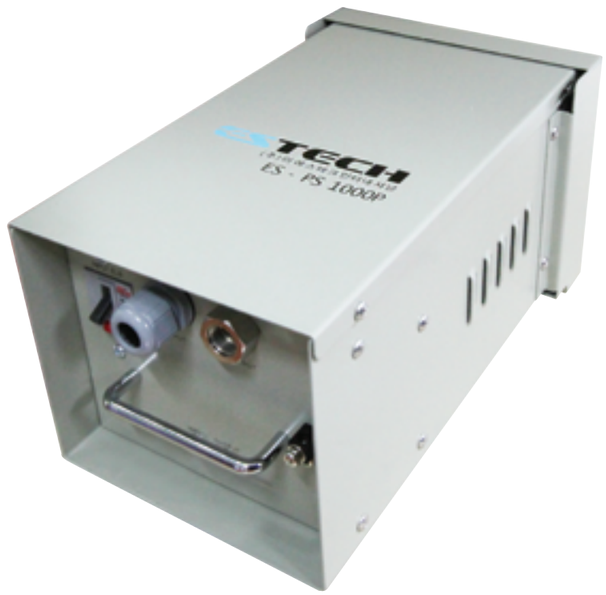


ESTECH INTERNATIONAL

PART.2

PSM series

PSM Series Features with a circuit breaker for input power, a module for selectable input source, a module to control the unstable and voltage automatically, voltage selectable output module in use of various circum-stances and a display module for intuitive recognition. Applied AVR function helps provide stable input power.



ES RackMount UPS

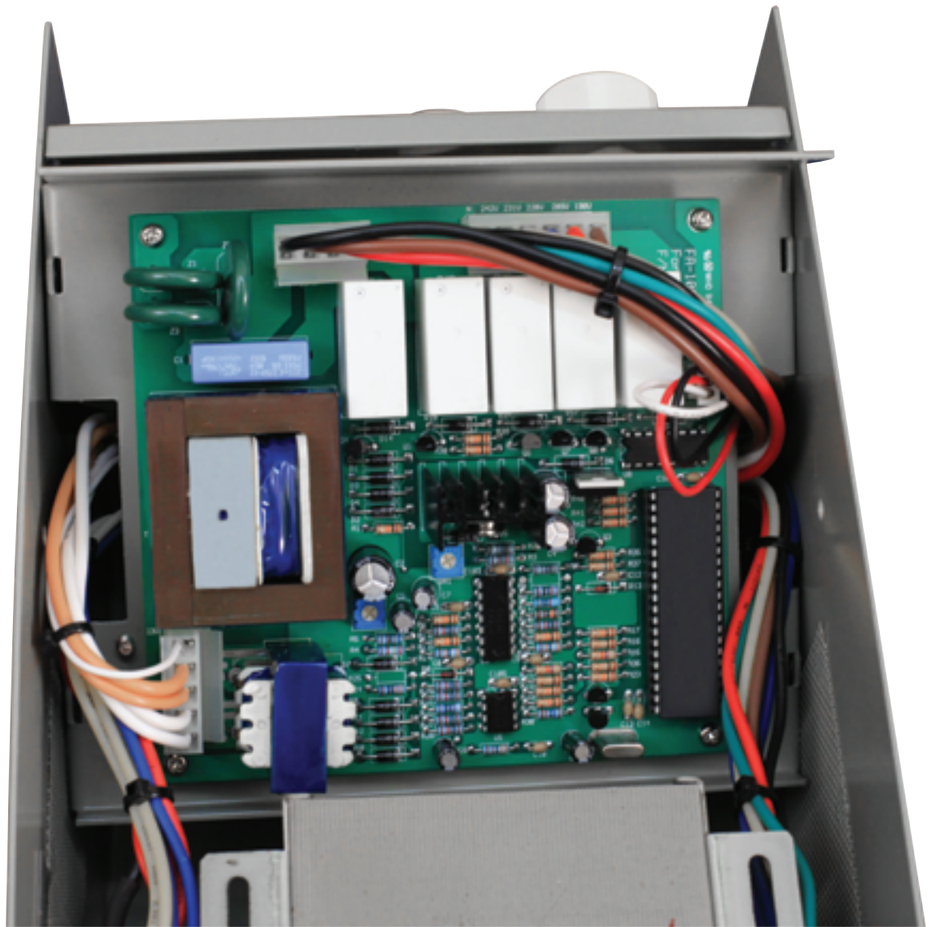
APD & STS

PSM Series Non-Standby Power Supply

FEATURES

High Quality non–standby CATV Power Supply

- Sine output waveform
- 5% Output Regulation
- Low operation noise and heat
- 93% High efficiency
- LED Indicator for system monitoring
- Selectable Output Voltage (63/75/87VAC)
- Emergency by–pass switch
- Include Intelligent AVR circuit
- Include overload and overvoltage protection function
- Output interrupt and auto recovery function from short or overload



Part Numbering System

PSM — Sine waveform, Cable/Broadband PS (Non-Standby Power Supply Series)

24 — Input Voltage (VAC)

5 — Input Frequency (Hz)

H30 — Output Power (VA): H30 =300VA, H45 =450VA, H60 =600VA, H75 =760VA, H90 =900VA, K10 =1,000VA, K12 =1,200VA, K13 =1,350VA

Model	Mazimum Output Power (VA)	Input Voltage (VAC)	Input Frequency (Hz)	Output Voltage (VAC)	Output Current (A)	Country
PSM–245–H30	300	240	50	63/75/87	4.76/4/3.33	India, Malaysia, England
PSM–245–H45	450	240	50	63/75/87	7.14/6/5	
PSM–245–H60	600	240	50	63/75/87	9.5/8/6.66	
PSM–245–H75	750	240	50	63/75/87	11.9/10/8.33	
PSM–245–H90	900	240	50	63/75/87	14.2/12/10	
PSM–245–K10	1,000	240	50	63/75/87	15.87/13.3/11.1	
PSM–245–K12	1,200	240	50	63/75/87	19/16/13.3	
PSM–245–K13	1,350	240	50	63/75/87	21.4/18/15	
PSM–225–H30	300	220	50	63/75/87	4.76/4/3.33	China, Indonesia, Vietnam, Russia, Thailand
PSM–225–H45	450	220	50	63/75/87	7.14/6/5	
PSM–225–H60	600	220	50	63/75/87	9.5/8/6.66	
PSM–225–H75	750	220	50	63/75/87	11.9/10/8.33	
PSM–225–H90	900	220	50	63/75/87	14.2/12/10	
PSM–225–K10	1,000	220	50	63/75/87	15.87/13.3/11.1	
PSM–225–K12	1,200	220	50	63/75/87	19/16/13.3	
PSM–225–K13	1,350	220	50	63/75/87	21.4/18/15	
⋮	⋮	⋮	⋮	⋮	⋮	

PSM-245-H30 *(Ordering Information Number)*

All products follow the part numbering system
The specification can be customized by customer requirement

General Specification

Input	Phase	Single (2P + GND)	
Output	Phase	Single (2P + GND)	
	Voltage	63 / 75 / 87 VAC	Selectable
	Output Waveform	TRUE SINE WAVE	
	Efficiency	Over 93% (Common 100% Load)	
Connection	Input	3P SEIZURE CONNECTOR	
	Output	1P SEIZURE CONNECTOR	
Dimension	Enclosure Material	EZI Steel	
	Dimension	180(W) × 165 (H) × 347 (D) mm	
	Weight	Max. 16 kg	
Environment	Temperature	-20℃ - 60℃ (Operation)	
	Relative humidity	0 - 95% (Non-Condensing)	
	Noise	Within 43 dB	
Option		Include emergency By-pass function	
		Stable output voltage by AVR function	

* All products follow the part numbering system
* This specification is subject to change without notice.

PSM Series buty in type

Display module

Indicates the status of healthy input power range and input power. Info of output source status is also provided

Power control module

To maintain stable output power voltage in a range of ± 5% which may occur from the variableness of input power in a range of ± 15%

Output module

transformer Output

Input control module

Comprised of a circuit breaker and toggle switch

① Input circuit breaker: Shut off input source in an event of disorder to prevent itself from damages. Restoring manually is available.
② Toggle switch : Shutting off input power, restoring and emergency bypass is selectable

ES Rackmount UPS

FEATURES

- 1KVA capacity
- Low operation noise and heat Include Intelligent AVR circuit.
- LED display for system monitoring
- Include overload and overvoltage protection function
- Easy replacement battery tray. (12V7AH x 4ea battery)
- Backup Time OLT x 1 ea = 30 min. / Gate way x 4ea = 60 min.

Part Numbering System

ERU - 245 - K12M *(Ordering Information Number)*

ERU	Input Voltage (VAC)		Input Frequency (Hz)	Output Power (VA)		Battery Voltage
Sine wave Cable/Broadband UPS (Standby Power Supply)	10 =100V	20 =208V	5 = 50Hz	K10 =1,000VA	K30 =3,000VA	L = 24V
	11 =110V	22 =220V	6 = 60Hz	K12 =1,200VA	K50 =5,000VA	M = 36V
	12 =120V	23 =230V		K20 =2,000VA		H = 48V
		24 =240V				

General Specification

Input	Phase	Single (2P + GND)	
	Voltage	220 Vac ±15%	
	Frequency	50/60 Hz ± 3%	
Output	Phase	Single (2P + GND)	
	Voltage	220 Vac ±5% (Line), ±2% (Inverter)	
	Frequency	50/60Hz ±3%	
	Output Waveform	True Sine wave	
	Shorten switching time	4m sec typical	
	Crest Factor	3:1	
	Power Factor	0.8 leg	
	Over Current	120% of Imin	
	THD	3% (Linear load)	
	Efficiency	95% (Line)	
Battery	Backup Time	10min	
	Battery Voltage	24VDC (12V 7Ah*2)	
Dimension	Dimension	400 (W) × 500 (D) x 88 (H) mm	
	Weight	23Kg	
Environment	Temperature	-20℃ - 60℃(Operation)	
	Relative humidity	0 - 95% (Non-condensing)	
	Noise	Within 43 dB	
Option I		NMS module and management software	

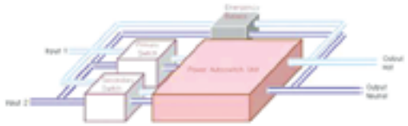
* This specification is subject to change without notice.

APD (Auto Power Distributor)

FEATURES

2U Rackmount type Power Distributor

- 3KVA capacity
- LCD display for system monitoring
- Include overload and overvoltage protection function
- Easy replacement module
- No operation noise
- Reduce a system downtime for core equipment.



Provide stable power to core equipment.

Sometimes, all equipments that is installed in a rack are turned off.
if one equipment has problem because a multi power outlet also turned off.

Part Numbering System

APD - 245 - K10 *(Ordering Information Number)*

APD	Input Voltage (VAC)		Input Frequency (Hz)	Output Power (VA)
Cable/Broadband APD (Auto Power Distributor)	10 =100V	20 =208V	5 = 50Hz	K10 = 1,000VA
	11 =110V	22 =220V	6 = 60Hz	K20 = 2,000VA
	12 =120V	23 =230V		K30 = 3,000VA
		24 =240V		

General Specification

Input	Phase	Single (2P + GND)	
	Voltage	220/240 Vac	
	Frequency	50/60 Hz ± 5%	
Output	Phase	Single (2P + GND)	
	Voltage	220/240 Vac	
	Frequency	50/60 Hz ± 5%	
	Transfer time	8ms typical	
	Efficiency	Over 98%	
Dimension	Dimension	483 (w)× 88 (H) x 350 (D) mm	
	Weight	5.5 Kg	
Environment	Temperature	-20℃ - 60℃ (Operation)	
	Relative humidity	0 - 95% (Non-condensing)	
	Noise	Within 43 dB	

* This specification is subject to change without notice.

STS (Static Transfer Switch)

FEATURES

- 3KVA capacity
- 2U Rackmount Size
- LCD display for system monitoring.
- Programable input condition
- Provide a stable power as compare two input source automatically
  (Input A: utility power ,Input b: UPS power)

Part Numbering System

STS - 245 - K10 *(Ordering Information Number)*

STS	Input Voltage (VAC)		Input Frequency (Hz)	Output Power (VA)
Cable/Broadband STS (Static Transfer Switch)	10 =100V	20 =208V	5 = 50Hz	K10 = 1,000VA
	11 =110V	22 =220V	6 = 60Hz	K20 = 2,000VA
	12 =120V	23 =230V		K30 = 3,000VA
		24 =240V		

General Specification

Input	Phase	Single (2P + GND)	
	Voltage	220/240 Vac	
	Frequency	50/60 Hz ± 5%	
Output	Phase	Single (2P + GND)	
	Voltage	220/240 Vac	
	Frequency	50/60 Hz ± 5%	
	Transfer time	8ms typical	
	Efficiency	Over 98%	
Dimension	Dimension	483 (w)× 88 (H) x 350 (D) mm	
	Weight	5.5 Kg	
Environment	Temperature	-20℃ - 60℃ (Operation)	
	Relative humidity	0 - 95% (Non-condensing)	
	Noise	Within 43 dB	

*This specification is subject to change without notice.

PART.3

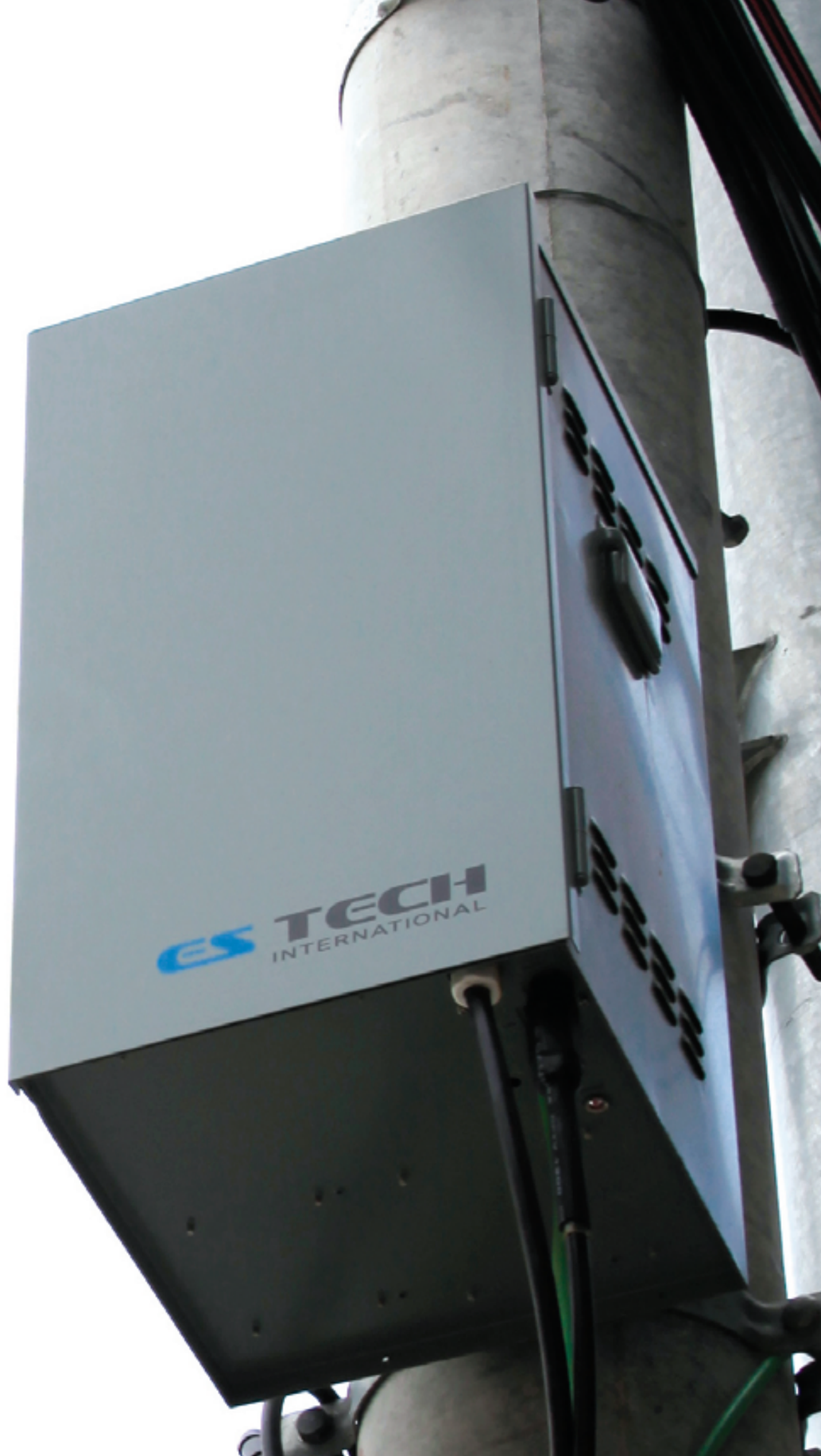
ES Pole / Ground Mount Enclosure

ES Pole Mount Enclosure is a rigid sheet metal structure that houses an inverter and batteries for outdoor installation. Chassis can be installed onto a pole with mounting belts. ES Pole Mount Enclosure is especially designed to handle many combinations of batteries conveniently with a sliding tray. Standard features include durable construction with exterior finished in light gray color. Totally enclosed design offers highest security from tamperig or unauthorized entry.

ES Pole Mount Enclosure

Outdoor Power System Enclosure

- Engineered to accommodate outdoor powering applications in pole or wall mount configurations.
- Sliding battery tray with lock-in/lock-out features standard.
- Enclosures are agency certified to meet applicable industry standard.
- All aluminum or EZI Steel construction and durable powder coat finish provides superior corrosion resistance.
- Cooling FAN for system temperature control.
- Specialized enclosure for SUN & MOON 600/900/1200/1350VA
- Engineered to accommodate outdoor powering applications
- in pole or wall mount configurations.
- Sliding battery tray with lock-in/lock-out features standard.
- All aluminum or EZI Steel construction and durable powder
- coat finish provides superior corrosion resistance.
- Cooling FAN for system temperature control.
- Provide various Input/output ports.
- Optional UPS supporter for ground mount



ES Pole Mount Enclosure Outdoor Power System Enclosure

Cooling FAN On Cover

Air Vent

Air Vent

Sliding Battery Tray

Input / Output port and circuit breaker on front side

Input port and indicator on bottom side

Enclosure SUE-900A/SUE-900E Specifications

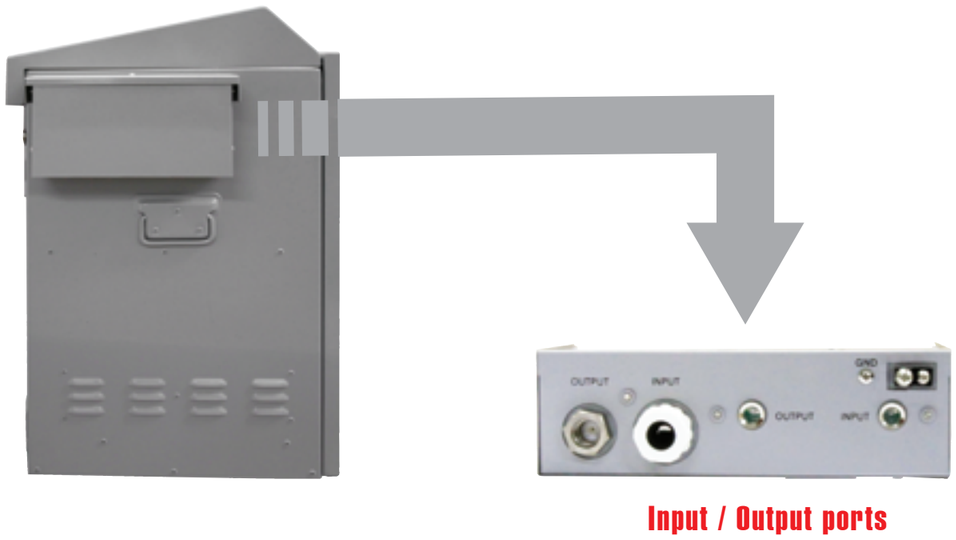
Model Number	SUE-900A		SUE-900E	
Enclosure Material	Aluminum		EZI Steel	
Battery Capacity	36V (3pcs x 35AH)			
Backup Time	600VA > 50 min	900VA > 30 min	1,200VA > 25 min	1,350VA > 20 min
Adapted UPS Unit	SUN Series 600/900/1,200/1,350 VA			
Cooling Solution	Side, Bottom Vent, Cooling FAN of Cover			
Input Ports	Front : 2 Bottom : 1			
Output Ports	Front : 2 Bottom : 1			
Dimension (W x H x D)	400 (W) x 700 (H) x 450 (D) mm			
Weight (kg)	Max. 19.5kg		Max. 45 kg	
Option 2	UPS supporter for ground mount			

* This specification is subject to change without notice.

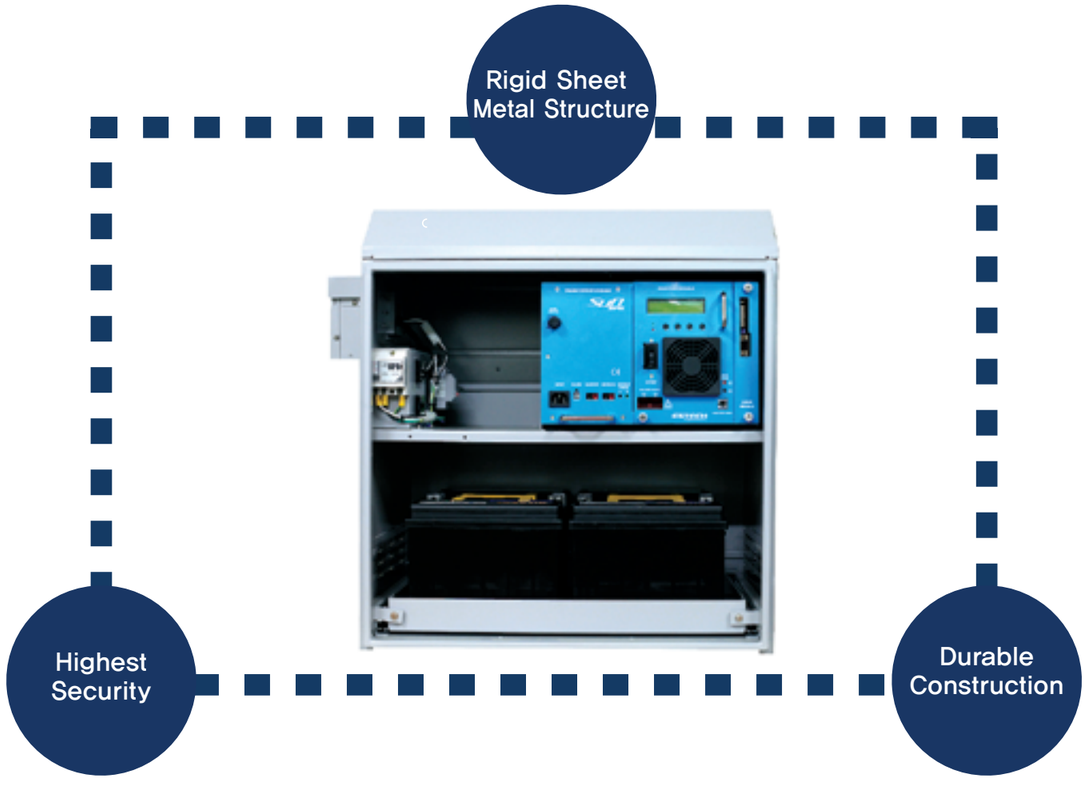
ES Pole Mount Enclosure

Outdoor Power System Enclosure

ESTECH INTERNATIONAL



Input / Output ports



General Specification

Model	ES-UA (US)-3120	ES-UA (US)-3240	ES-UA (US)-4120	ES-UA (US)-4240	ES-UA (US)-6120	ES-UA (US)-6240	ES-UA (US)-8120	ES-UA (US)-8240	ES-UA (US)-9120	ES-UA (US)-9240
General Specification										
Battery Capacity	3	3	4	4	6	6	8	8	9	9
All Aluminum Const.	-UA	-UA	-UA	-UA	-UA	-UA	-UA	-UA	-UA	-UA
All EZI Steel Const.	-US	-US	-US	-US	-US	-US	-US	-US	-US	-US
Pole Mount Bracket	0	0	0	0	0	0	0	0	0	0
Power Coat Finish	0	0	0	0	0	0	0	0	0	0
Removal Door/Lid	0	0	0	0	0	0	0	0	0	0
Battery Slide Tray	1	1	1	1	2	2	2	2	3	3
Alarm Lamp	0	0	0	0	0	0	0	0	0	0
Output Lamp	0	0	0	0	0	0	0	0	0	0
Enclosure Cooling FAN	0	0	0	0	0	0	0	0	0	0
Surge Protector	0	0	0	0	0	0	0	0	0	0
Storm Hood	0	0	0	0	0	0	0	0	0	0
Output Connector	0	0	0	0	0	0	0	0	0	0
Ground terminal	0	0	0	0	0	0	0	0	0	0
Input terminal	0	0	0	0	0	0	0	0	0	0
In/Out Control Box	0	0	0	0	0	0	0	0	0	0
Option										
Enclosure Supporter	0	0	0	0	0	0	0	0	0	0
External Input port	0	0	0	0	0	0	0	0	0	0
Input exchange	0	0	0	0	0	0	0	0	0	0
Door switch	0	0	0	0	0	0	0	0	0	0
ELB	0	0	0	0	0	0	0	0	0	0
iELB	0	0	0	0	0	0	0	0	0	0
Dimension										
Width (mm) Control box (80mm)	620		730		620		620		730	
Height (mm)	600		600		900		900		1200	
Depth (mm)					450					
Weight (kg)	25		30		31		55		38.5	
VIEW										

* This specification is subject to change without notice.

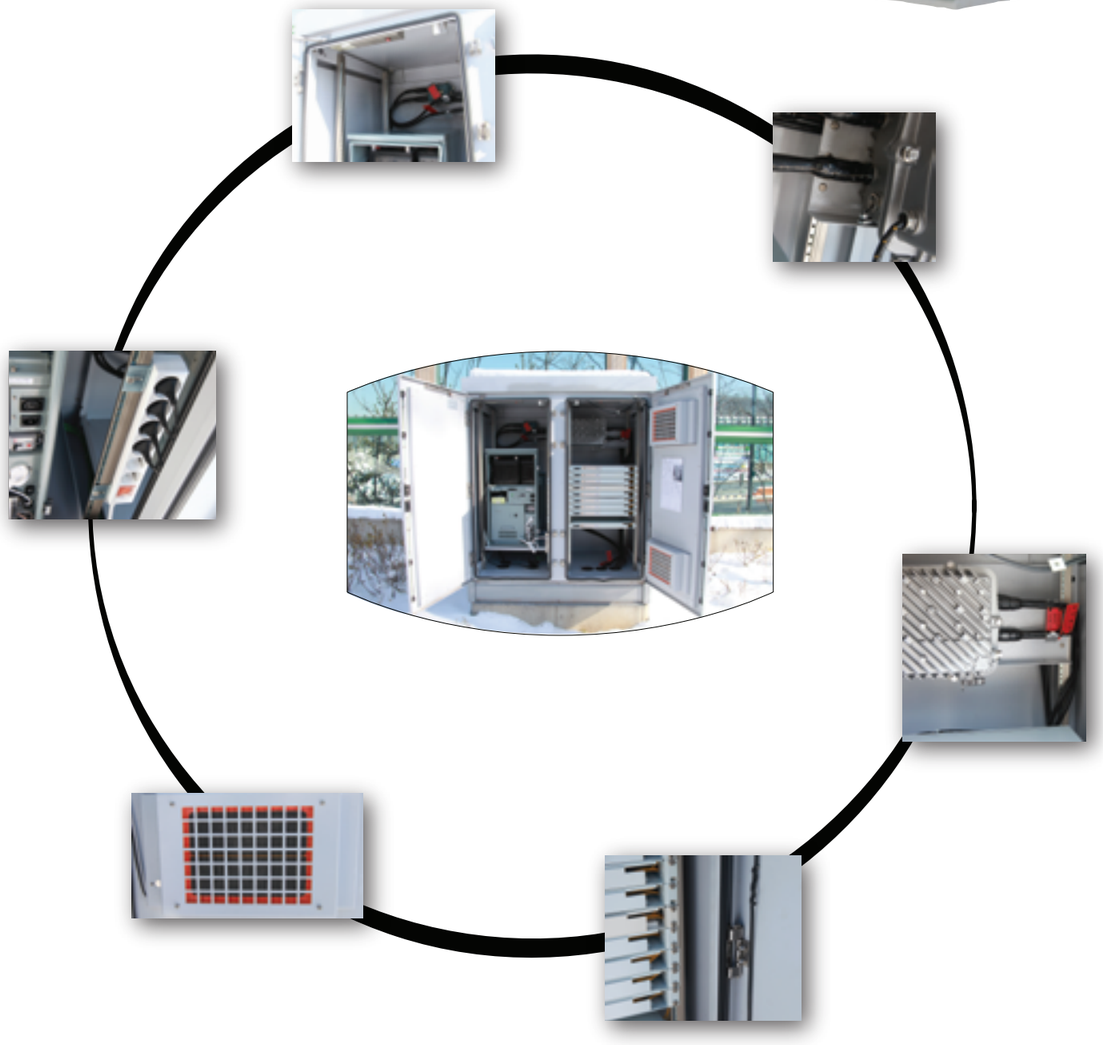
ES Ground Mount Enclosure

Outdoor Power System Multi-Enclosure

FEATURES

- Specialized enclosure for UPS and other equipments.
- All EZI steel construction and durable.
- Moving UPS shelf.
- Multi-shelf for easy working.
- Shelf for 19-inch/20-inch equipments
- Removal back-side

DETAIL VIEW



Enclosure ES-UM-S1921 Specifications

Enclosure Material	EZI Steel
Adapted UPS Unit	SUN Series 900/100/1200/1350 VA
Adapted equipments	L2/L3 switches. OFD, ONU
Multi-Shelf	include
Dimension (W x H x D)	1200 (W) x 1200 (H) x 600 (D) mm
Weight (kg)	100kg
Latch	2pcs for pole
Optional	UPS pedestal for ground mount

option to install

SWITCH HUB	ONU AMPLIFIER	FDF	BATTERY