

Liebert Hipulse E
The High-ECO-Availability UPS



Liebert®


EMERSON™
Network Power

We're **Emerson Network Power**, backed by Emerson, a global company that brings technology and engineering together to provide innovative solutions for the benefit of our customers. We're the world leader in providing **Business-Critical Continuity™** to organizations like yours, enabled by our product and service centres of expertise.



Liebert, is one of industry-leading Product Brand for many technology solutions in power systems, connectivity, embedded power, outside plant, precision cooling and monitoring.

The Liebert Adaptive Architecture™ creates a power and cooling infrastructure for IT systems that can meet the highest availability requirements, enhance operation flexibility and reduce the cost of ownership.



Liebert Hipulse E Hi-Availability UPS

The growth of mission critical applications in today's digital world and the increased dependence of your business on such applications have led Emerson Network Power to design Liebert Hipulse E UPS to provide you with reliable, high-availability power.

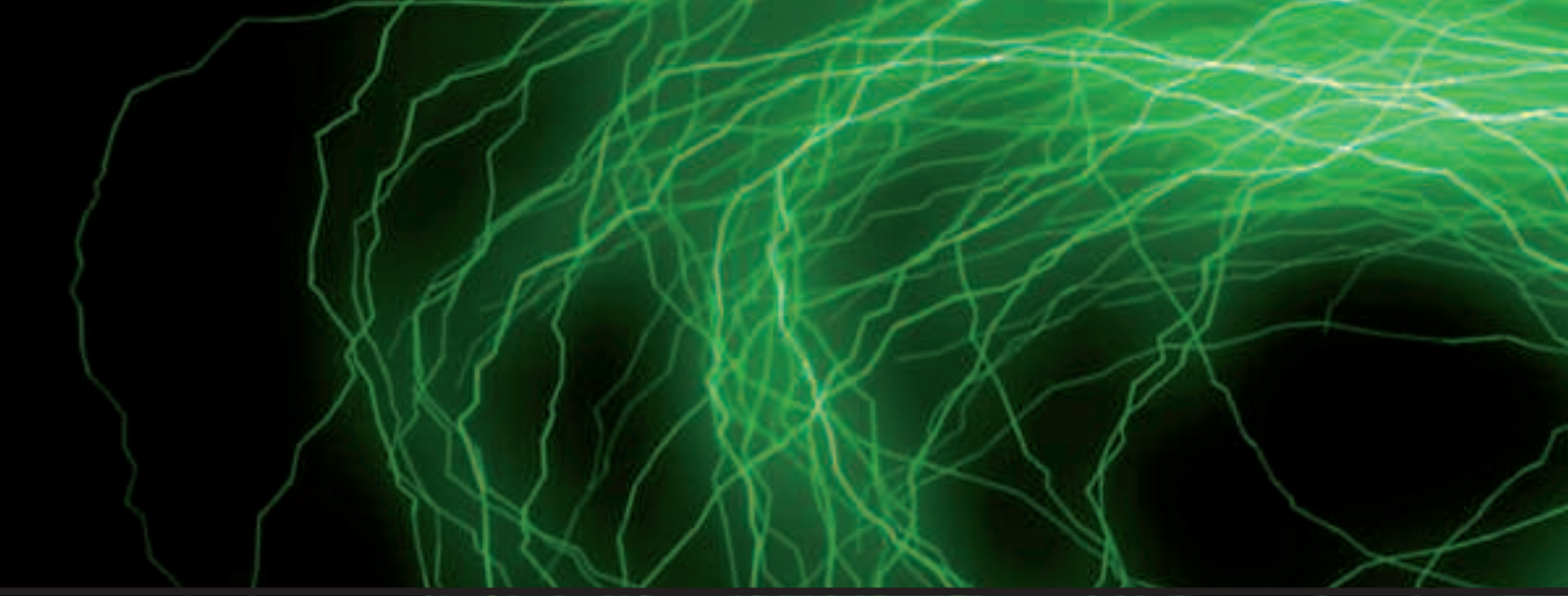
Having extensively surveyed customers' needs and thoroughly mapped their requirements, Hipulse E has been carefully designed to deliver maximum Return On Investment (ROI).

The Liebert Hipulse E provides industry-leading overload and short-circuit capability

3 Phase
110% for 1 hour
125% for 10 min
150% for 1 min
1 Phase
200% for 30 sec

Inverter Short-Circuit

3 phase = 1.5 times nominal current
1 phase = 2.9 times nominal current
for <5 sec (EN 50091-1)



Liebert Hipulse ensures you the highest availability

- From scalability to redundancy, from user-friendliness to maintainability, from parallel ability to connectivity, and from investment protection to lower cost of ownership, whichever values you need, Liebert Hipulse E provides industry leading efficiency. Liebert Hipulse E, is the top line in our range of power quality solutions for mission critical applications, some of which are listed below. Liebert Hipulse E (with true on-line double conversion topology) comes in five popular ratings, ranging from 300 to 800 kVA (400 V, 50/60 Hz).
- With a set of options and features that address customer needs by providing value and achieving high availability and reliability.
- The New Liebert Hipulse E with its parallel redundant and dual bus configurations is best in class for MTBF and MTTR, providing your critical load with the optimum availability. With a dual bus system, availability can reach 99,999999.





The best flexibility in and adaptability to load type (Leading PF compatibility)

Load compatibility

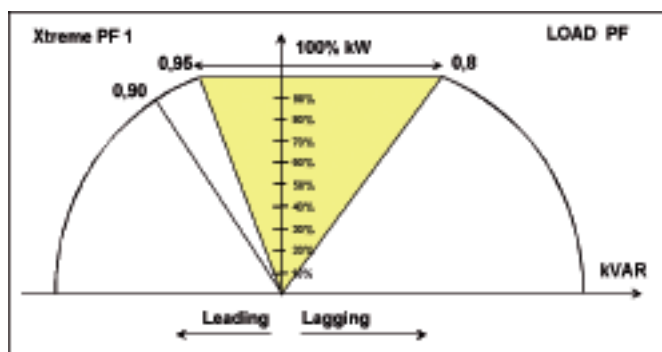
The trend in ICT loads is to absorb a capacitive PF especially in light load conditions. Hipulse has an innovative design that adapts the UPS output filter to the capacitive PF and an output transformer with a rating that is optimised to handle these loads.

With Liebert Hipulse E you can tune the output filter by matching different load power factor values. With the option of the internal Xtreme power factor, a wide range of output power factors can be covered, increasing the maximum value of active power. Different factory settings enable the unit to provide its

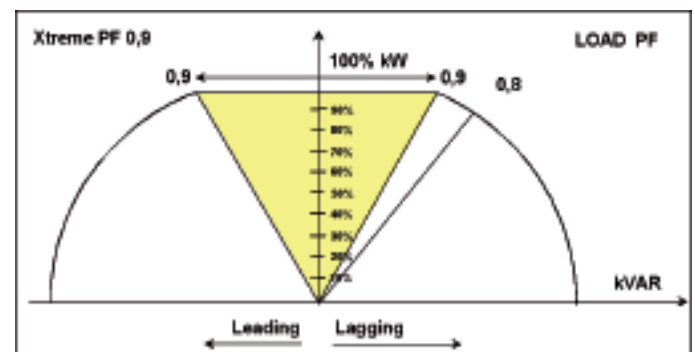
max power performance whatever the load power factor is.

- 1) Level 1: No kW derating for a load PF range from 0.95 lead to 0.8 lagging
- 2) Level 2: No kW derating for a load PF range from 0.9 lead to 0.9 lagging

Medium flexibility with Xtreme PF1



Maximum flexibility with Xtreme PF0.9



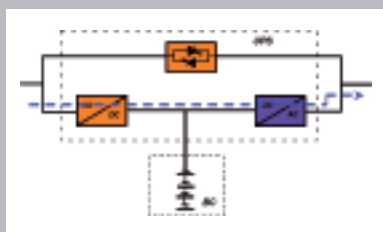
Line compatibility

The new Liebert Hipulse E provides optimum harmonic reduction, thanks to three key features:

- Upstream Green Power through low input current THDI & high input power factor using different solutions by way of 6-pulse with harmonic filter or 12-pulse with passive harmonic filter, depending on the requirement
- Further reduced THDI can be achieved with the addition of the **Active Filter** as an external option; this reduces the cost of ownership thanks to an improved input power factor that will reduce electricity costs.



The new Liebert HipulseE provides you with an extremely efficient way of using the UPS Available in single module or dual bus configuration, the Intelligent ECOMode improves UPS Efficiency by up to 98%.



Efficiency without compromise and lower ownership costs

The brand new Intelligent ECOMode option

Intelligent ECOMode gives you many advantages and cost savings:

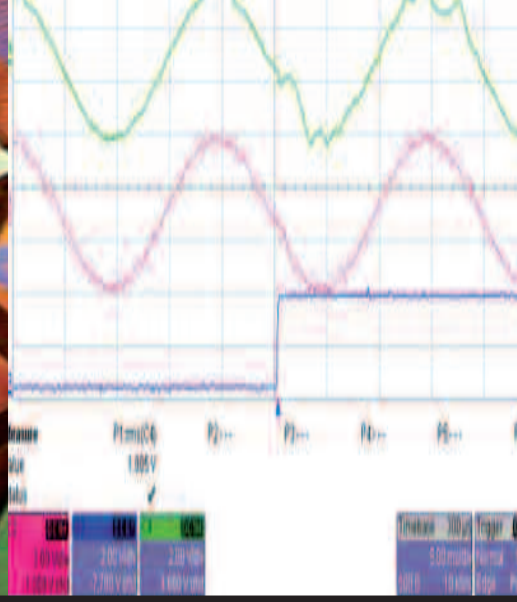
- Set UPS control either in double conversion or ECOMode without any impact on the load
- Immediately achieve significant energy savings in existing data centers
- Save energy continuously or in periodical cycles and transfer to double conversion when the utility exceeds the ITIC limit
- Ecomode can be activated in various ways, depending upon the customer's needs

Compared with a double conversion running at a typical efficiency of around 93% at full load (92% at 50% of Load), annual savings on the UPS can be considerable (@ 0.1 €/kWh)

Indirect effect

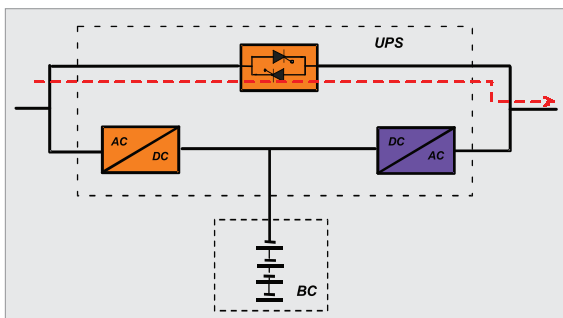
Generally, the UPS is kept in an air conditioned room. The heat losses from the UPS must be compensated for by air conditioning, which further increases electricity consumption. Therefore, UPS efficiency affects the degree of air conditioning required.

Cost saving per year at 0.1€/kWh (estimation)	UPS		Cooling at 100% load €/year
	At 50% €/year	At 100% €/year	
300 kVA	€ 6.996	€ 11.534	€ 3.845
400 kVA	€ 9.327	€ 15.379	€ 5.126
500 kVA	€ 11.659	€ 19.223	€ 6.408
600 kVA	€ 13.991	€ 23.068	€ 7.689
800 kVA	€ 18.655	€ 30.757	€ 10.252

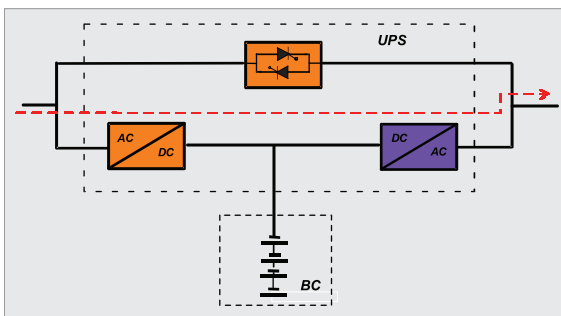


How much you can save and how

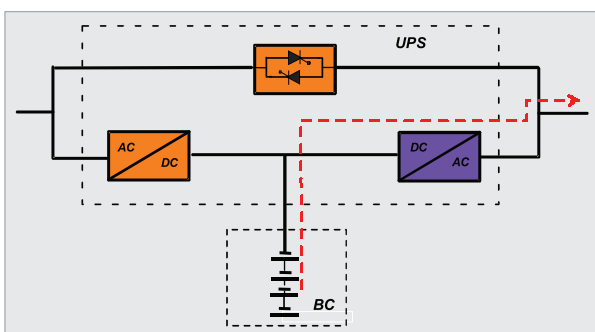
1) With the power utility within a user-adjustable voltage range, the UPS is working on bypass at high efficiency. The inverter is always synchronised with the bypass.



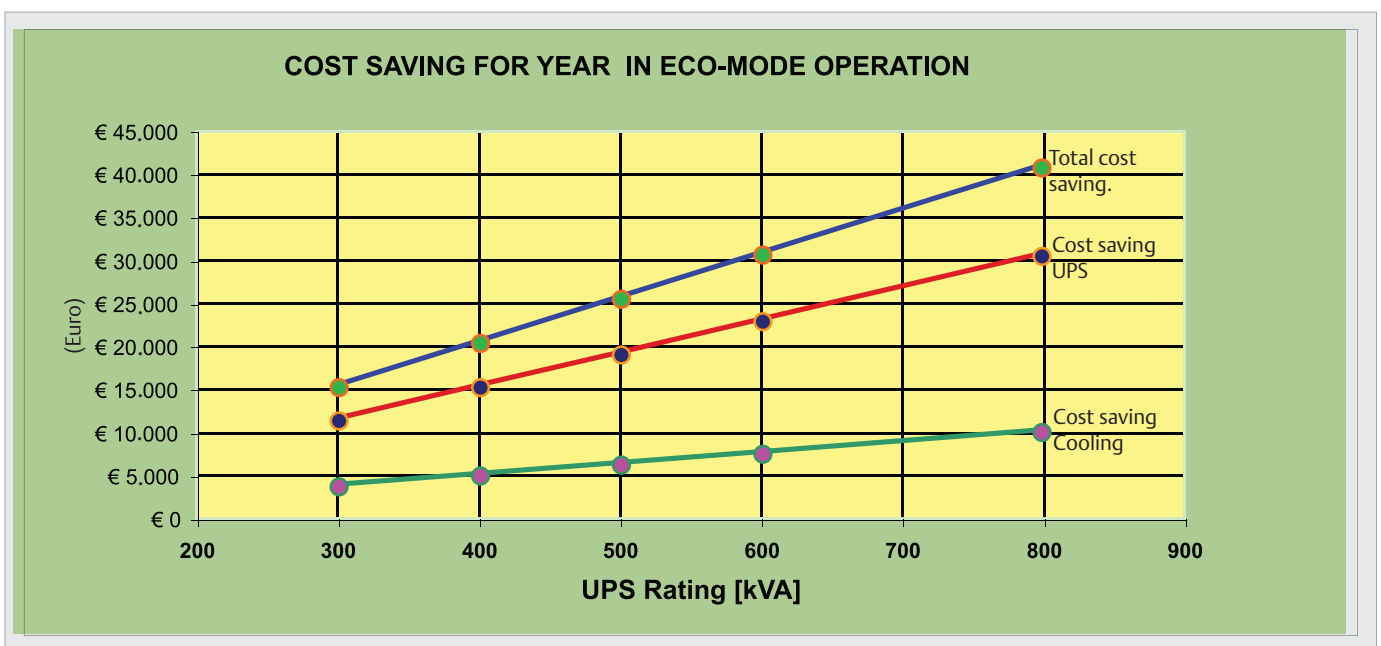
2) If the grid exceeds the pre-fixed limits, the UPS switches immediately to double conversion.



3) For wide grid variation, the UPS switches to battery, continuously feeding the load.



- This operation mode reduces the cost of ownership by saving energy
- The UPS can work either in DOUBLE CONVERSION or in ECO-MODE and either continuously or in duty cycles fixed by the user
- The cost savings in ECO-MODE operation vs. DOUBLE CONVERSION, working at 93% of full load efficiency, are summarised in the following graph, in continuous operation at 100% of load and with an energy cost of 0.1 €/kWh





Value-added power options

Liebert Hipulse E offers you an array of value-added options listed below:

External

- Battery circuit breaker (wall or cabinet mounted)
- Battery cabinet
- Main static switch (MSS) for centralised static bypass switch
- Wrap-around maintenance bypass cabinet
- Top cable entry
- Input isolation transformer
- Remote alarm monitor (wall mounted)

Internal

- Paralleling kit (for 1+5 modules)
- Input harmonic filter
- Common battery sharing kit
- Fan failure alarm
- Power communication option
- IP protection: IP21 - IP30 - IP31

Special feature applications (SFA's)*

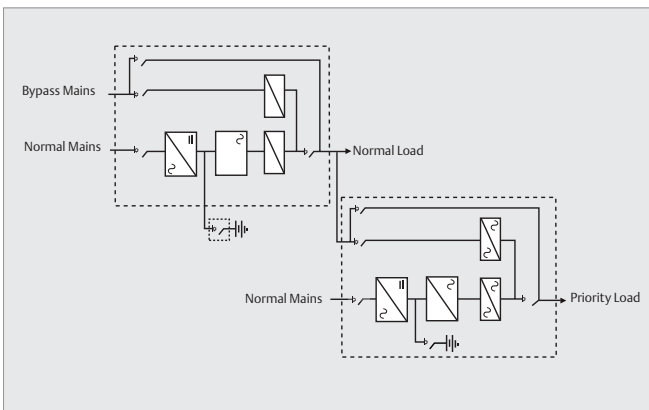
- Dynamic system expander (DSE)
- Multi-bus (2-bus, 3-bus and 4-bus)



Multi bus configurations

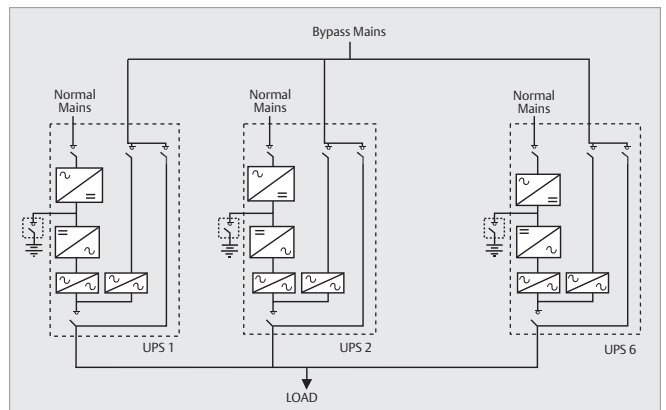
Liebert Hipulse E is designed to include numerous useful optional configurations. The top 4 are listed below:

Hot Stand-by



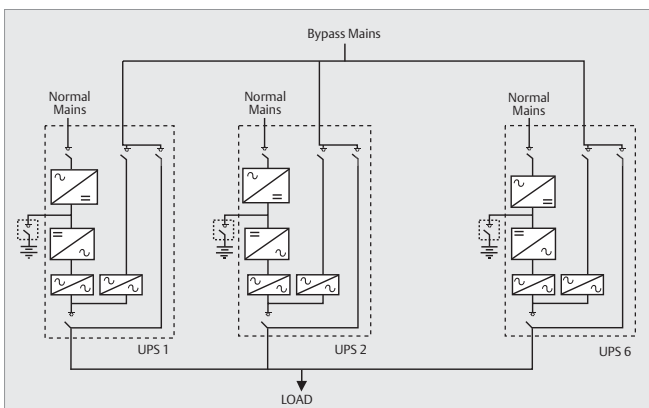
1 + N with Distributed Bypass

Parallel configuration without centralised bypass



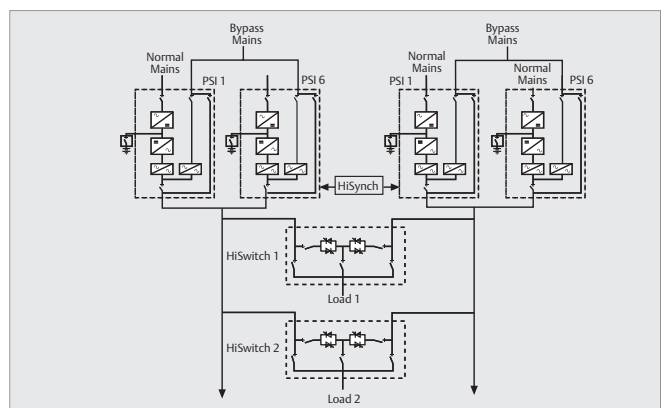
N + 1 with Centralized Bypass

Parallel configuration with centralised bypass



Multi Bus (2-bus, 3-bus, 4-bus)

2- bus configuration with HiSwitch2



*Both HiSwitch and HiSwitch2 are compatible

General Characteristics - [Liebert Hipulse E]

Model Name Hipulse E

Nominal Power Rating at 0.8 PF Load	KVA	300	400	500	600	800
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Input Parameters

Input Voltage to Rectifier	Vac	380/400/415*(400V:nominal) 3-phase, 3-wire				
Input Voltage to Bypass	Vac	380/400/415*(400V:nominal) 3-phase +N, 4-wire				
Permissible Input Voltage Range	Vac	323 to 457				
Input Frequency	Hz	50 or 60				
Permissible Input Frequency Range	Hz	47 or 63				
Input THDi at nominal voltage at full load	%	<4-5% with 12-pulse + Filter				
Input Power Factor at nominal voltage		>=0,90% with 12-pulse + Filter				
Flexi Power Walk-In	second	5 to 120 (selectable)				

Battery & DC Parameters

Battery Type	VRLA (Valve Regulated lead Acid) or Wet or NiCd				
Nominal Battery Bus	Vdc	396 (Float Voltage: 446V)	480 (F. V.: 540V)	396 (F. V.: 446 V)	480 (F. V.: 540V)
End-Cell Voltage	Vdc/Cell	Selectable from 1,65 to 1,90 (for VRLA/Wet Cells)			
DC ripple voltage in float & Const V Ch.mode	%	<1 (RMS value)			
Temperature compensated Battery Charging		Optional			

Output Parameters

Inverter Type		IGBT-based Sine-Sine PWM Cotrolled				
Output Power	KW	240	320	400	480	640
Output Voltage	Vac	380/400/415* (400V:nominal) 3-phase, 4-w				
Output Voltage Regulation	%	+/- 0,5 (3 phase RMS average)				
Output Frequency	Hz	50 or 60				
Output Frequency Regulation	%	+/- 0,05				
Output Voltage THD at nominal voltage	%	1 (typ), 2% (max)				
Capability to handle High Crest Factor Load		3:1 (compliant with IEC 62040-3)				
Capability to handle Step Load	%	0-100 or 100-0				
Transient Recovery	m seconds	10 (recovery to 95% of the voltage level)				
Capability to handle Leading PF Load		Up to 0,7**				
Voltage Displacement	°el	120° +/- 1° el (with 100% unbalanced load)				
Overload Conditions	%FL	110 for 60 minutes 125 for 10 minutes 150 for 1 minutes				

System Parameters

UPS Efficiency (without any power option)	%	Up to 98% in ECOmode				
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Physical Parameters & Standards

Width (applicable to 6 pulse version)***	mm	1640	2460	Not Applicable		
Width (applicable to 12 pulse version)***	mm	2280	2460	2460	3200	4410
Depth	mm	850		1000		
Height	mm	1900				
Weight 6p (approx.)	Kg	1850	2400	Not applicable		
Weight 12p (approx.)	Kg	2540	3100	4200	4500	5050
Colour		Ral 7021 - Ral 7035				
Front door Opening (for better Serviceability)		More than 180°				
Degree of Protection for UPS Enclosure		IP 20 even with front door in opened condition				
Standards & Conformities		IEC 62040-3, IEC 62040-2, IEC 62040-1-1, CE Mark ; EN 62040-1-1, EN 50091-2, EN62040-3, EN 60950, EN 60529 and VFI 111				

Enviromental Parameters

Storage Temperature Range	°C	-25 to 70 (UPS) & -20 to 30 (Battery)				
Operating Temperature Range	°C	0 to 40 (UPS) & 20 +/- 5 (Battery)				
Relative Humidity	%	0 to 95 (non condensing)				
Maximum Altitude above MSL (Mean Sea Level)	m	1000 (as per IEC 62040/3)				

* 4-5% more power output for 415V input & output ; ** with suitable derating; ***with OR without input harmonic filter

While specifying the parameters here, it is assumed that, extremes of all the conditions do not apply simultaneously.

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