

Online Double Conversion UPS

Falcon x7

UPS 160-200-250-300-400-500-600KVA



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Fuji Electric's Falcon X7 Series is an unique and innovative UPS with competitive benefits of low ownership cost, high efficiency and is designed to operate in harsh environments with higher availability.

Highlights of Falcon X7 UPS at a Glance

Flexibility

- Flexible configuration for optional inbuilt transformer
- Compatible with multiple battery technologies including Lithium Ion batteries
- Common battery option for optimised selection of Battery for UPS in parallel or Independent configurations
- Wide input voltage from +20% to -40%
- Genset compliant with adaptive progressive walk-in and rectifier delay start options.
- 3 Phase 4 wire rectifier fully compatible with existing infrastructure
- Parallel upto 8 units for capacity or redundancy

Reliability

- Better Operating temperature of 0-40°C with special attention in component selection and design to improve reliability.
- Input phase sequence correction provided as standard.
- Advanced battery management techniques to improve battery life with three stage charging and with auto equalizing charge at predefined intervals.

Total Cost of Ownership

- Efficiency of upto 96.5% in online double conversion mode
- Intelligent Eco mode operation with an efficiency of upto 99%



Applications

- Infrastructure
- Data Center
- IT/ITES & Commercial Buildings
- Engineering Industry
- Telecom
- Electronics Manufacturing
- Process Industry
- Food & Beverage Manufacturing
- Textiles

Innovative & Unique Technology in UPS System

Power walk-in and delayed start of rectifier gives the flexibility to install the UPS in all kinds of electrical infrastructure without any changes or oversizing of infrastructure.

The wide input voltage tolerance of the UPS (-40% to +20%) enables the UPS to work in online mode without using battery support for wide input voltage variations and even if there is a input phase reversal.

The UPS is fully accessible from the front side, no additional rear or side clearance is required, optimizing the area required for UPS installation.

Falcon X7 has the flexibility to add an internal isolation transformer which can be connected either at the input, output or on static bypass based on the installation requirement.

Optimised & Flexible Battery Configuration

Battery configuration can be adapted between 38-48 no's of 12V battery blocks which gives flexibility for optimised battery selection.

Battery configuration can be optimised with independent battery bank for each UPS or shared battery bank for multiple UPS which helps to optimise the selection of battery, space required for battery installation and the cost of installation.

Advanced 3 Level Topology

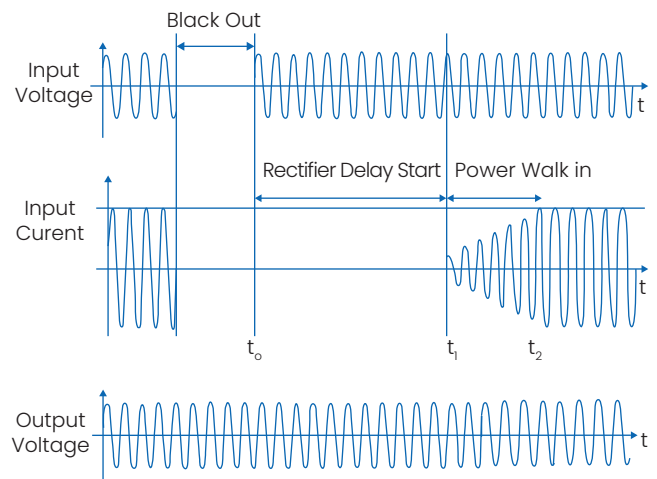
Falcon X7 series incorporates advanced 3 level technology. The Fuji Electric 3 level topology is more advantageous than conventional 3 level topology as the losses can be reduced.

Fault Tolerant Architecture

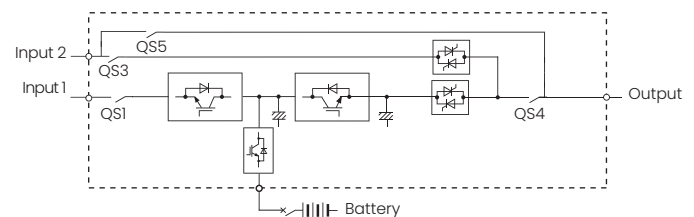
High inverter short circuit current handling capacity to clear faults which occur between phase and neutral or phase to phase - phase on the load side.

Independent three phase control enables handling of unbalanced three phased loads without any unbalance of output voltages.

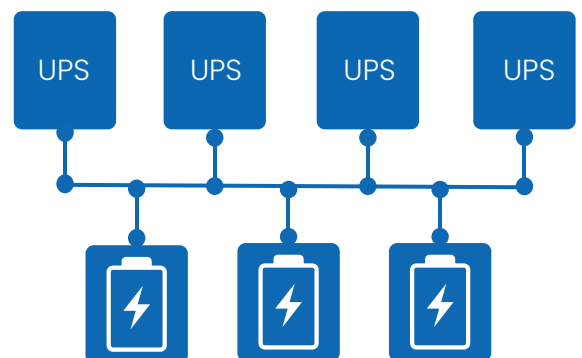
■ Rectifier Delay Start



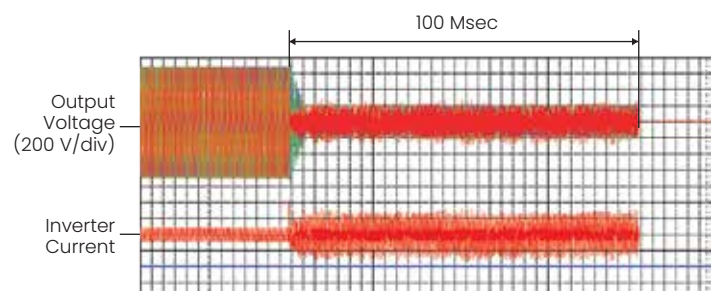
■ UPS Block Diagram



■ Shared Battery Configuration



■ Short Circuit Current of UPS



Designed for Better Reliability, Maintainability & Serviceability

Falcon X7 series UPS is based on Fuji Electric's proven UPS technology and uses state-of-the-art power devices and power electronic technologies to offer better Reliability, Maintainability and serviceability for large capacity UPS system.

Advanced Parallel Configuration

Falcon X7 uses advanced Fuji Electric "Individual-Independent" parallel redundant architecture using looped communication method. This system has no single point of failure and each unit monitors all the other units with loop communication lines to ensure high reliability in parallel UPS systems.

Advanced Thermal Management

Falcon X7 is designed to operate continuously at 40°C ambient temperature and uses forced air cooling with suction from front and exhaust from top. Special consideration in airflow design to isolate PCB from power devices for higher reliability. UPS is suitable to be installed in a well ventilated room without any air conditioner.

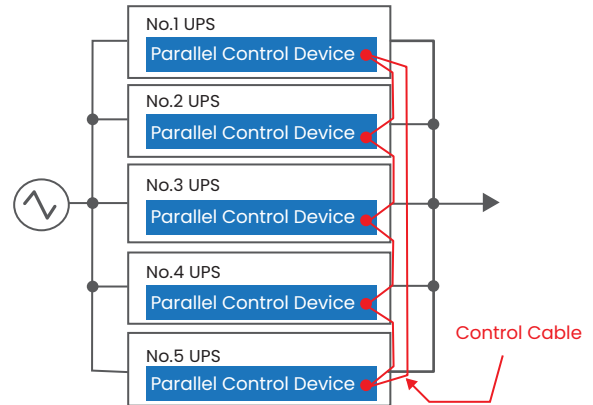
Ease of Access & User Friendliness

Falcon X7 maintenance requires only front access and back to back installation of UPS systems is possible to optimize space usage in UPS rooms.

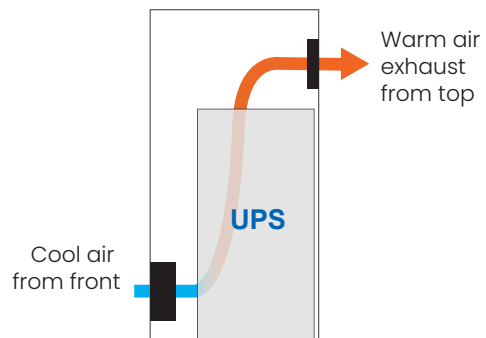
The Human Machine Interface (HMI) is intuitive and user friendly with a LCD screen and LED mimics. Easy Identification of UPS working Status with the LED Glow bar.

- Green LED → Normal Operation
- Yellow LED → Mains Failure or Battery Mode of Operation
- Red LED → Critical Alarms Inverter Tripped

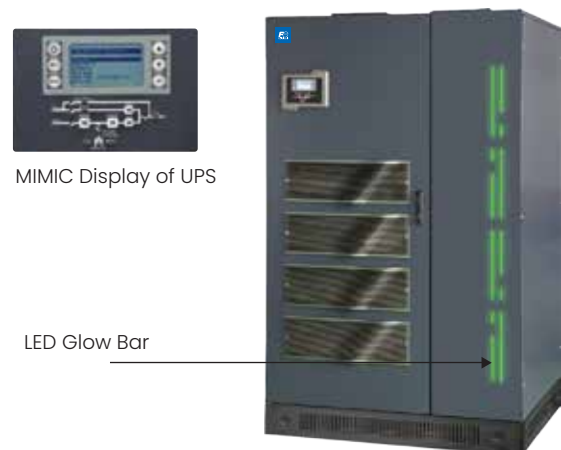
■ Parallel Control Logic



■ Ventilation Arrangement of UPS Room



■ User-Friendly HMI



Energy Efficient UPS System

Falcon X7 is an online double conversion UPS fully meeting the requirements of IEC62040-3.

The Eco mode operation of Falcon X7 guarantees an overall AC-AC efficiency of 99% and an efficiency of upto 96.5% in online double conversion mode of operation offering the highest efficiency.

Optimised Cost of Ownership

Falcon X7 can be operated upto 40°C (Ambient Temperature) without any precision air conditioner as required by most UPS. This along with high efficiency helps large saving in CAPEX and OPEX cost associated with UPS.

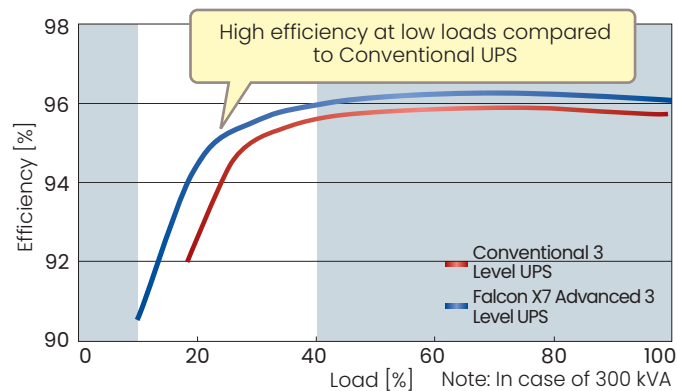
Long life power Electronic grade capacitors are being used in the UPS which doesn't warrant for the replacement of capacitors during its lifetime.

Intelligent Eco Mode of Operation

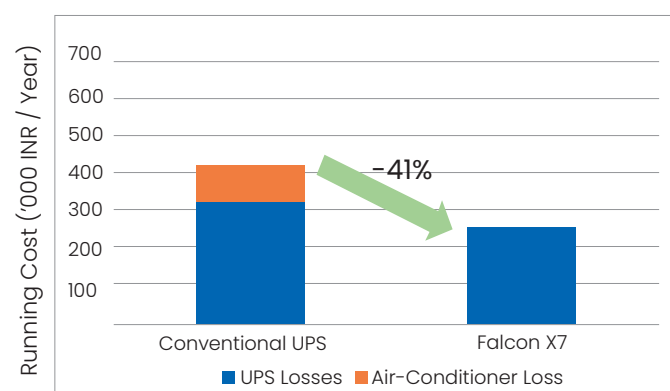
Falcon X7 has a intelligent high efficiency Eco Mode operations which can be enabled for energy savings (99% Efficiency).

The Firmware, tested to Indian power conditions monitors the quality of the input power, and enables the Eco-Mode operations on bypass only when input power conditions are stable. Otherwise the UPS transfers back to double conversion mode in less than 5ms whereby the reliability of power is ensured to the critical load.

■ Efficiency

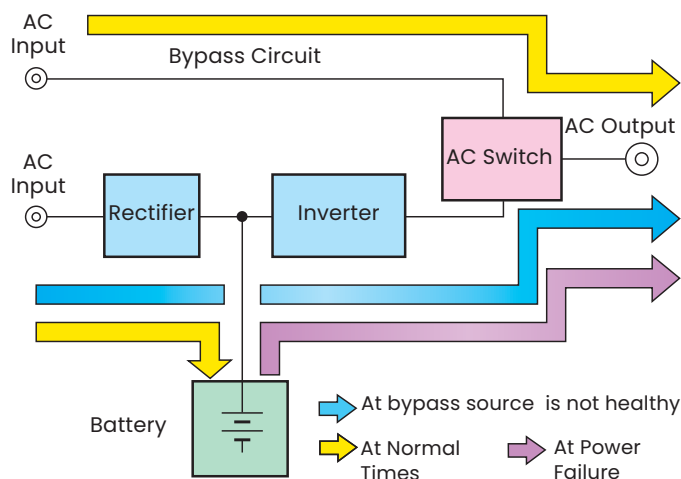


■ Energy Saving



Calculation Conditions:
Total annual running cost at Rs.7/kWh and 30% (100 kW) load

■ Eco-Mode Operation of UPS



Technical Specification

Falcon x7

UPS 160-200-250-300-400-500-600 KVA

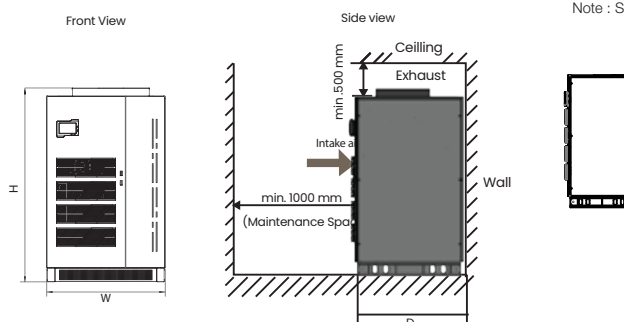
Model		Falcon X7						
Series	UPS Rating (KVA)	160	200	250	300	400	500	600
Input Parameters	Rated Voltage	400/415 V, 3-Phase + N + PE (380V Optional)						
	Rated Voltage Tolerance	+20%, -40%* @ 400V						
	Rated Frequency	50/60 Hz ±10%						
	Current Harmonic Distortion (THDi)**	<3% at 100% Load						
Bypass Parameters	Rated Voltage	400/415 V ±10% (5-15% Selectable) 3-Phase + N + PE (380V Optional)						
	Rated Frequency	50/60 Hz						
	Connection	Separate From Mains Input						
Output Parameters	Rated Voltage	400 V, 3-Phase + N + PE (380/415 V Selectable)						
	Rated Frequency	50 or 60 Hz (Configurable)						
	Output Power Factor	0.9 , Unity PF Available As Per Application Requirements						
	Voltage Variation - Static Load	±1%						
	Crest Factor	3:1						
	Voltage Distortion at Linear Load	≤2% (Typical)						
	Voltage Distortion at Non-Linear Load	≤3% (as per IEC62040-3)						
	Frequency Stability with Inverter Synchronized to the By-Pass Mains	±2% (Configurable from ±1% to ±6%)						
	Voltage Phase Shift with Balanced and Unbalanced Load	120° ± 1°						
	Overload Capacity	110% for 60 Mins, 125% for 10 Mins, 150% for 1 Min						
	Load Power Factor	0.7 Leading to 0.5 Lagging without De-rating						
	Efficiency	Up to 99% in Eco Mode and Upto 96.5% in Online Mode						
	Battery Parameters	Number of Battery (12V) Blocks	40 Nos (Configurable from 38 to 48 Batteries)					
Nominal Battery Voltage		480Vdc (Configurable from 456-576Vdc)						
Compatibility		Compatible with SMF, Tubular, Ni-Cd, Li-Ion Battery						
Environmental Parameters	Ambient Temperature for the UPS	0 to 40 Degree Celsius* (at Rated Input and Load)						
	Ingress Protection	IP20						
	Range of Relative Humidity	upto 95% max (without Condensing)						
	Maximum Operating Altitude	Up to 1000 above MSL						
	Storage Temperature	From 0°C to 60°C (UPS)						
	Acoustic Noise at 1m from Panel Front (Ref ISO3746)	< 68 dBA						
Other	Display	128x64 LCD Graphic Display with LED Mimic						
	Colors	RAL-9005 (Front Door), RAL-7016 (Other Sides)						
	Cooling System	Forced Air Cooling						
	Installation Site	Indoor						
	Cable Entry	Front - Bottom Entry			Top / Bottom Entry			
	Communication Interface (Options)	Simple Network Management Protocol (SNMP), MODBUS-RTU, Dry Contacts						
Standards	Safety	IEC62040 - 1						
	Electromagnetic compatibility (EMC)	IEC62040 - 2						
	Performance	IEC62040 - 3						
Mechanical Parameters	Width (in mm)	840	1000	1000	1200	1200	1700	1700
	Depth (in mm)	900	1000	1000	1000	1000	1000	1000
	Height (in mm)	1800	2090	2090	2090	2150	2000	2000
	Weight (in Kgs)	990	1125	1190	1280	1765	1850	1910

*at part Load

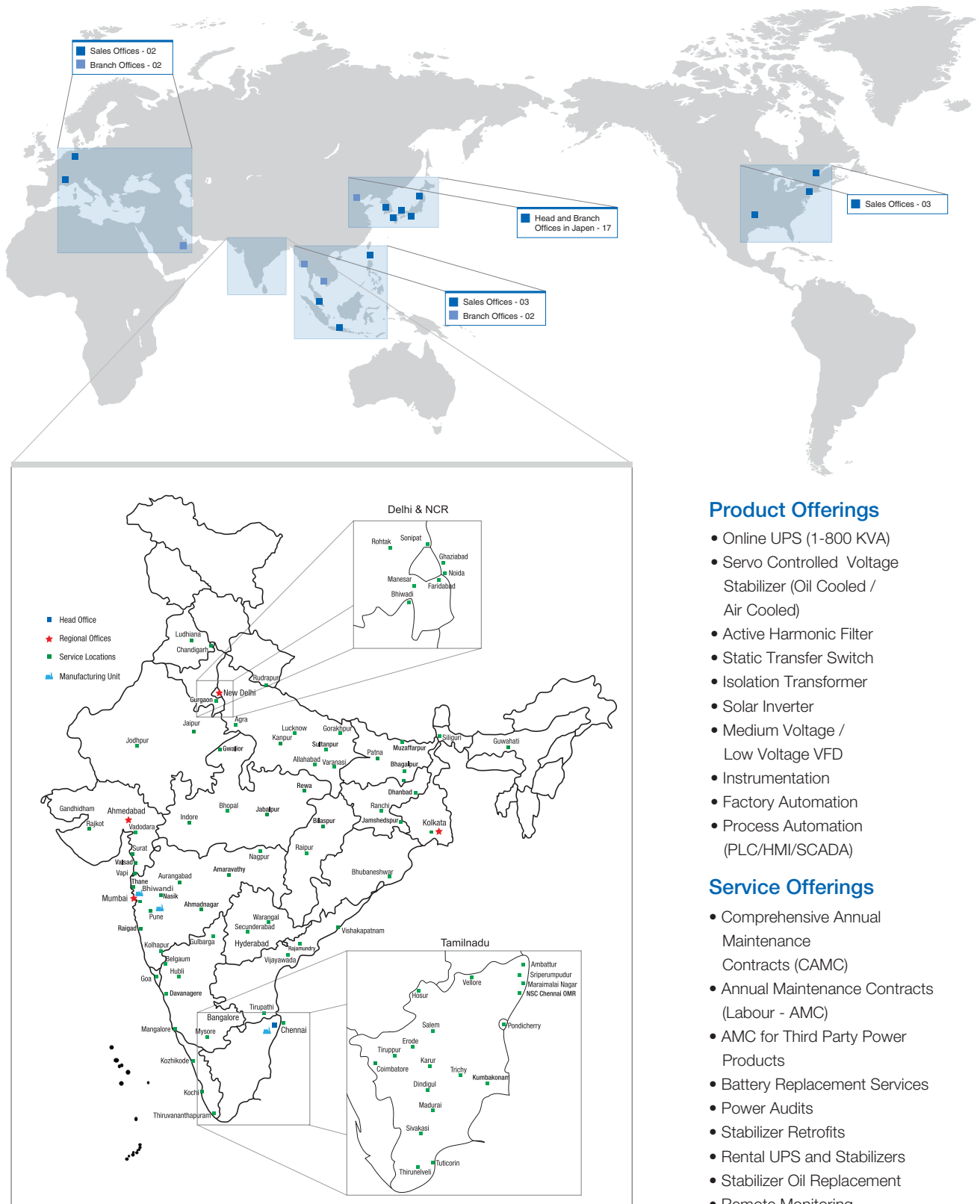
**THDv @<1%

Note : Specifications are subject to Change

UPS Main Unit



Global Presence



Product Offerings

- Online UPS (1-800 KVA)
- Servo Controlled Voltage Stabilizer (Oil Cooled / Air Cooled)
- Active Harmonic Filter
- Static Transfer Switch
- Isolation Transformer
- Solar Inverter
- Medium Voltage / Low Voltage VFD
- Instrumentation
- Factory Automation
- Process Automation (PLC/HMI/SCADA)

Service Offerings

- Comprehensive Annual Maintenance Contracts (CAMC)
- Annual Maintenance Contracts (Labour - AMC)
- AMC for Third Party Power Products
- Battery Replacement Services
- Power Audits
- Stabilizer Retrofits
- Rental UPS and Stabilizers
- Stabilizer Oil Replacement
- Remote Monitoring

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