

Online Double Conversion UPS

Falcon x5

UPS 60-80-120-160-200-250-300-600 KVA



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Fuji Electric's Falcon X5 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 X5 UPS at a Glance

Flexibility

- Common battery option for optimised selection of Battery for multiple 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 3 wire rectifier fully compatible with existing infrastructure
- Compatible with all types of industrial loads including regenerative loads
- Parallel upto 8 units for capacity or redundancy

Reliability

- 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 auto equalizing charge at pre-defined intervals.
- Monitoring runtime of critical components, such as fans, capacitors, batteries for predictive life estimation

Total Cost of Ownership

- Efficiency of upto 95.5% in online double conversion mode of operation with in-built isolation transformer
- Intelligent Eco Mode of Operation with an efficiency of upto 99%



Applications

- Engineering Industry
- Automotive and Auto Ancillaries
- Electronics Manufacturing
- Process Industry
- Food & Beverage Manufacturing
- Textiles
- Infrastructure
- Data Center

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 system (-40% to +20%) enables the UPS to work in on-line mode without using battery support for wide input voltage variations and even if there is an 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 installation.

Inbuilt Output galvanic isolation transformer gives flexibility to connect two different input sources for rectifier and bypass mains. This also gives the flexibility to adapt the downstream earthing system based on the installation requirements.

Optimised & Flexible Battery Configuration

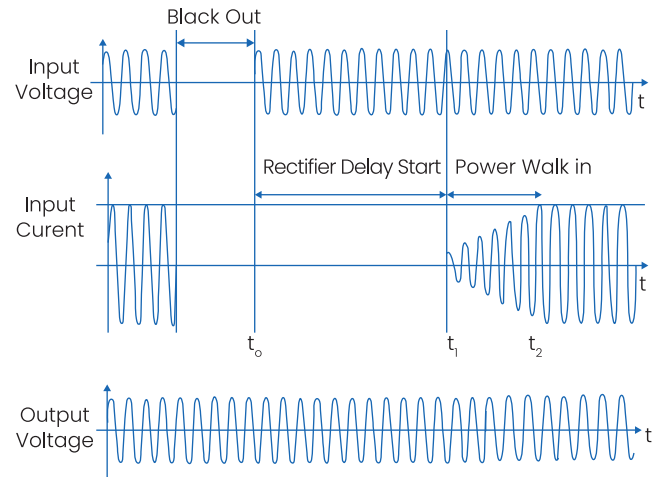
Battery configuration can be adapted between 40-44 no's of 12V battery blocks which gives flexibility for optimised battery selection.

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.

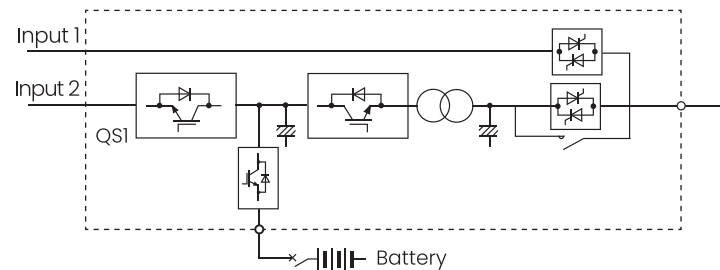
Advanced 3 Level Topology

Falcon X5 series incorporates advanced 3 level technology. The Fuji Electric 3 level topology is more advantageous than conventional 3 level topology as losses can be reduced.

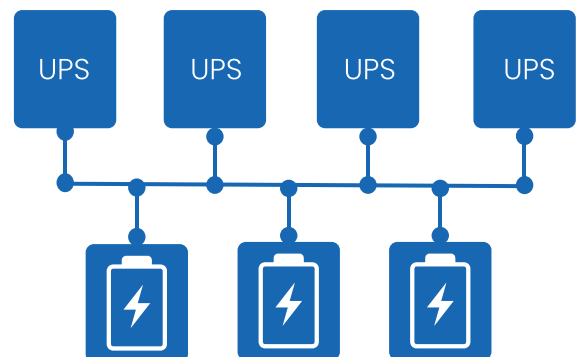
■ Rectifier Delay Start



■ UPS Block Diagram



■ Shared Battery Configuration



Designed for Better Reliability, Maintainability & Serviceability

Falcon X5 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 systems.

Fault Tolerant Architecture

High inverter short circuit current handling capacity to clear downstream faults which occur between phase and neutral on load side upto 3.5 times nominal current for 100 milli seconds.

Advanced Three Phase Control enables handling of unbalanced three phase loads without any unbalance of output voltages.

Advanced Parallel Configuration

Falcon X5 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 X5 is designed to operate continuously at 40°C ambient temperature and uses forced air cooling with suction from the front and exhaust from the 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.

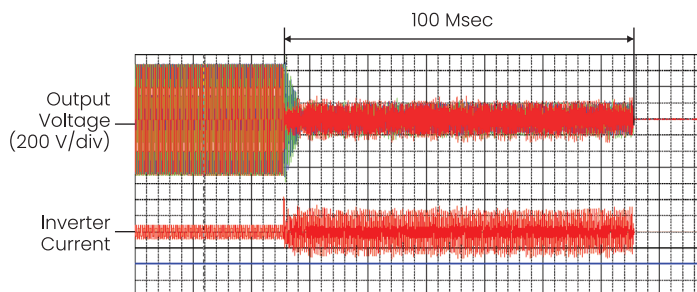
Ease of Access & User Friendliness

Falcon X5 maintenance requires only front access and back to back installation of UPS systems is possible to optimize space usage in UPS Rooms.

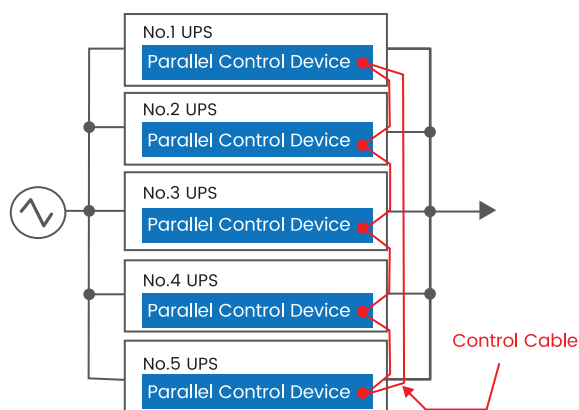
The Human Machine Interface (HMI) is intuitive and user friendly with a LCD screen and LED mimics. Easy identification of UPS working Status with the LED Glow bar.

- Green LED → Normal Working
- Yellow LED → Battery Mode of Operation
- Red LED → Critical Alarms

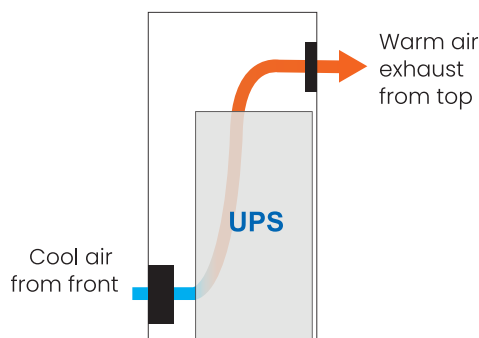
Short Circuit Current of UPS



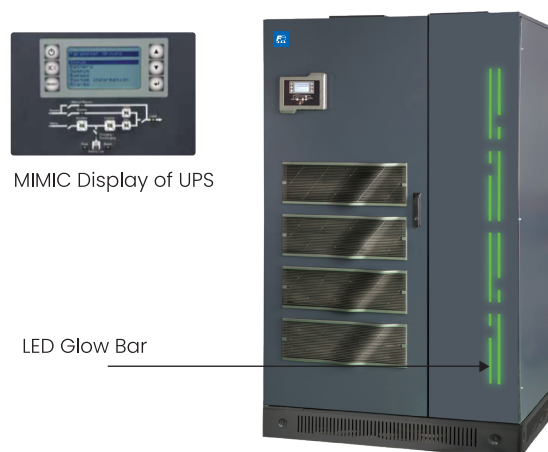
Parallel Control Logic



Ventilation Arrangement of UPS Room



User-Friendly HMI



Energy Efficient UPS System

Falcon X5 is an online double conversion UPS fully meeting the requirements of IEC 62040-3.

The Eco mode operation of Falcon X5 guarantees an overall AC-AC efficiency of 99% and an efficiency of upto 95.5% in online double conversion mode of operation offering the highest efficiency, for UPS with in-built isolation transformer.

Optimised Cost of Ownership

Falcon X5 can be operated upto 40°C (Ambient Temperature) without any precision air conditioner as required by most UPS. This along with high efficiency helps long saving in CAPEX and OPEX cost associated with UPS.

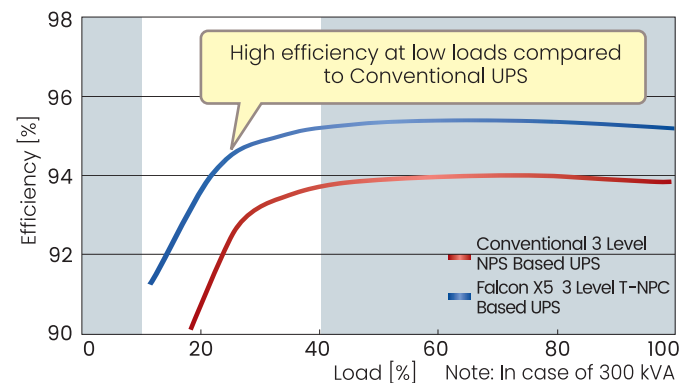
Long life power Electronic grade capacitors are being used in the UPS which does not require the replacement of capacitors during its lifetime.

Intelligent Eco Mode of Operation

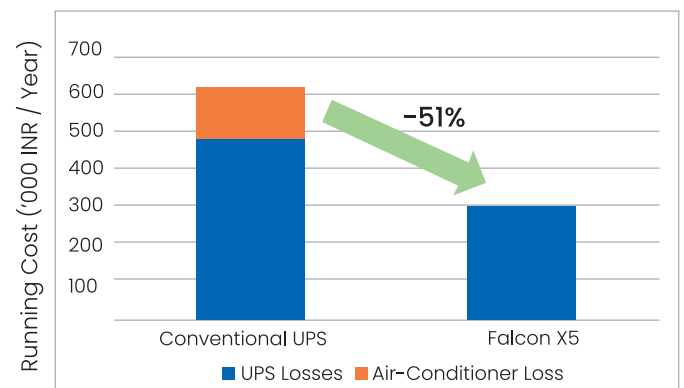
Falcon X5 has a intelligent high efficiency Eco Mode operations which can be enabled for energy savings (99% Efficiency).

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

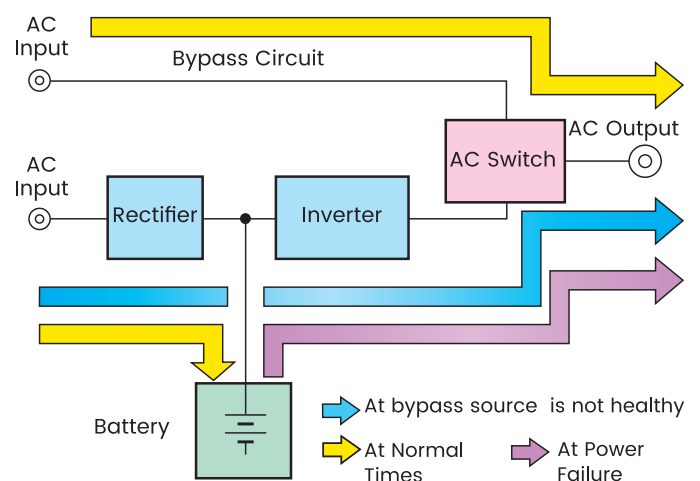


■ Energy Saving



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

■ Eco-Mode Operation of UPS



Technical Specification

Falcon x5

UPS 60-80-120-160-200-250-300-600 KVA

UPS Rating (KVA)	60	80	120	160	200	250	300	600
UPS Rating (KW)	60	80	120	160	200	250	300	600
Input Parameters								
Rated Voltage	400 V, 3 Phase + PE							
Rated Voltage Tolerance	+20%, -40%*							
Rated Frequency	50/60 Hz							
Current Harmonic Distortion (THDi)**	<3% at Load 100%							
Bypass Parameters								
Rated Voltage	400 V ±10%, 3 Phase + N + PE							
Rated Frequency	50 or 60 Hz (Configurable)							
Output Parameters								
Rated Voltage	400 V (Settable 380/415 V), 3 Phase + N + PE							
Rated Frequency	50 or 60 Hz (Configurable)							
Voltage Variation - Static Load	±1%							
Crest Factor	3:1							
Voltage Distortion at Linear Load	≤1% (Typical)							
Voltage Distortion at Non-Linear Load (as per IEC62040)	≤3%							
Frequency Stability with Inverter Synchronized to The By-Pass Mains	±2% (Settable from ±1% to ±6%)							
Voltage Phase Shift with Balanced and Unbalanced Load	120 ± 10							
Overload Capacity at 400C	110% for 60 mins, 125% for 10 mins, 150% for 1 min							
Load Power Factor	0.7 Leading to 0.5 Lagging without Derating							
Efficiency	Upto 99% in Eco Mode and upto 96.5% in Online Mode							
Battery Parameters								
Nominal Battery Voltage	480 V _{dc}							
Compatibility	Compatible with SMF, Tubular, Ni-Cd, Li-Ion Battery							
Environmental Parameters								
Ambient Temperature for the UPS	0 to 40°C							
Range of Relative Humidity	upto 95% max (without Condensing)							
Maximum Operating Altitude	Up to 1000 above MSL							
Storage Temperature	From -25°C up to 60°C (UPS)							
Acoustic Noise at 1m from Panel Front (Ref ISO3746)	< 65 dBA							
Mechanical Parameters								
Dimensions (Width in mm)	600	800	1000	1000	1200	1200	1700	1700
Dimensions (Depth in mm)	800	800	1000	1000	1000	1000	1000	1000
Dimensions (Height in mm)	1750	1750	2000	2000	2050	2050	2050	2050
Weight in Kgs (Approx)	800 kgs	850 kgs	980 kgs	1200 kgs	1290 kgs	1580 kgs	1650 kgs	2050 kgs

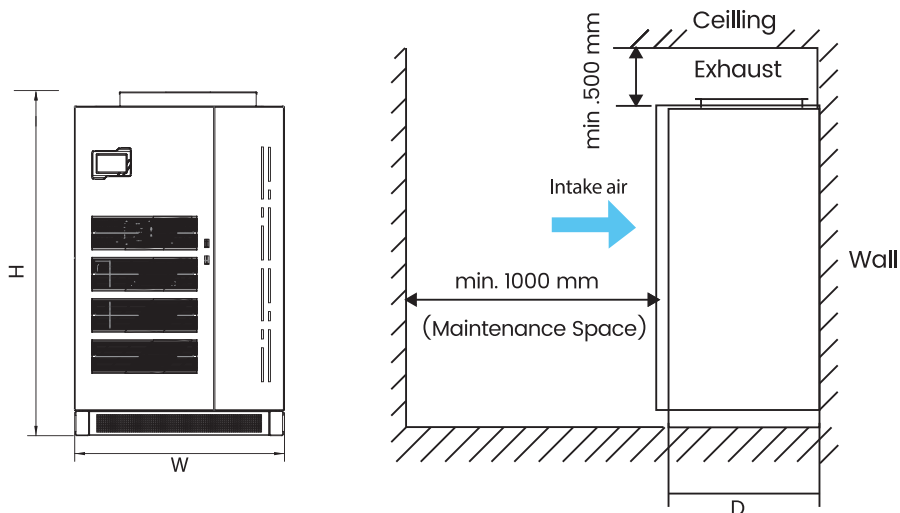
*at Part Load

**THDv @ <1%

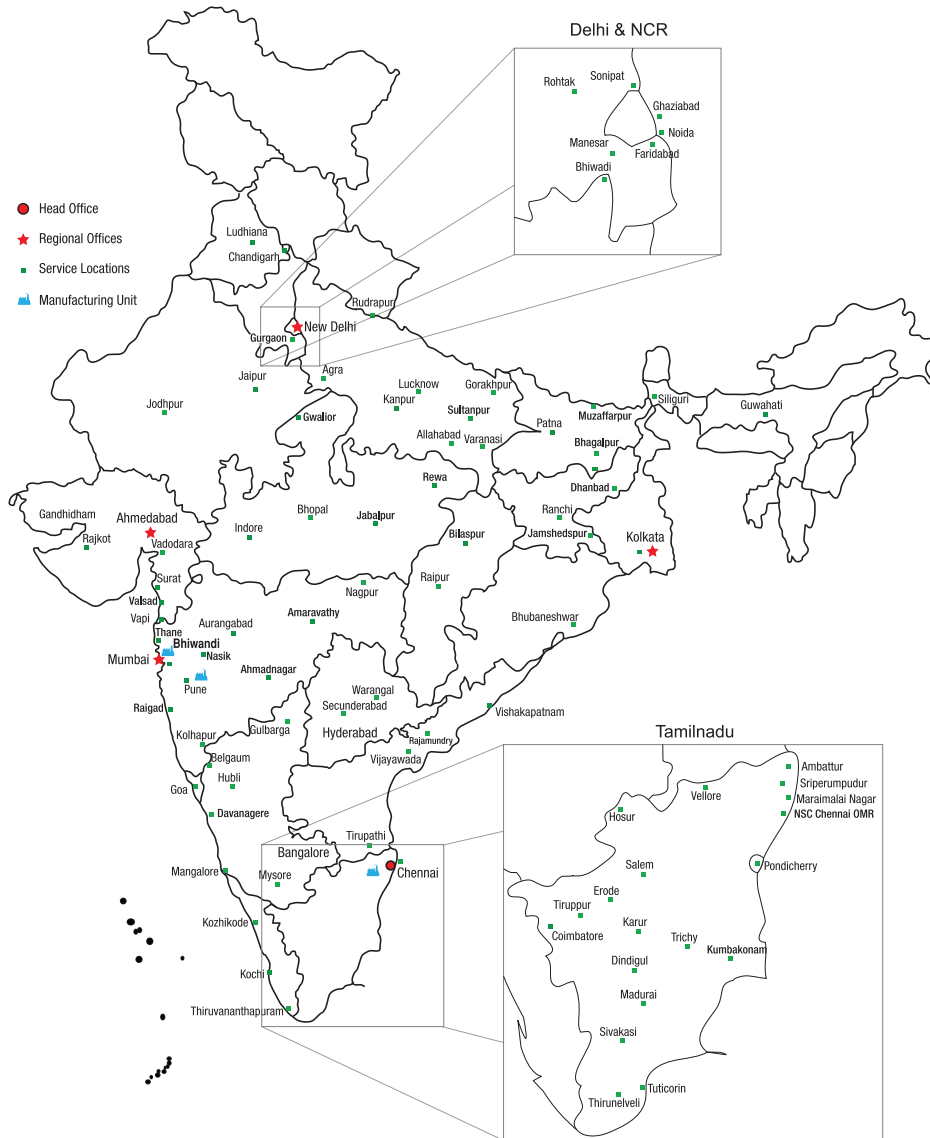
Front View

Side view

UPS Main Unit



Pan India Sales & Service Network



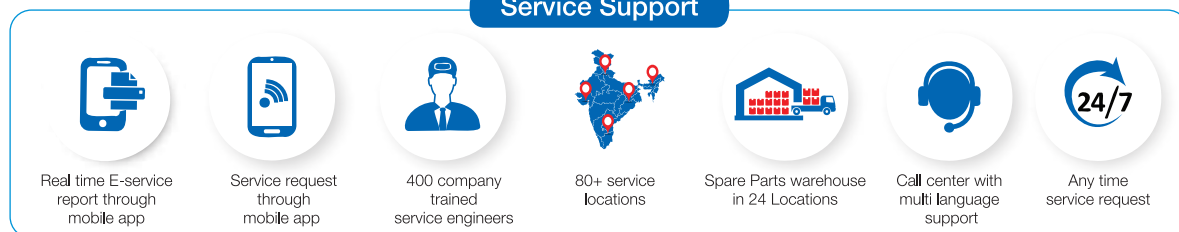
Product Offerings

- 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

Service Support



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