

Online Double Conversion UPS

Falcon x5

UPS 60-80-100-120-160-200-250-300KVA



Falcon x5

UPS 60-80-100-120-160-200-250-300 kVA

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 optimized 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. The transformer can also be connected either at the input, global output or on static bypass based on the installation requirement. This also gives the flexibility to adapt the downstream earthing system based on the installation requirements.

Optimized & Flexible Battery Configuration

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

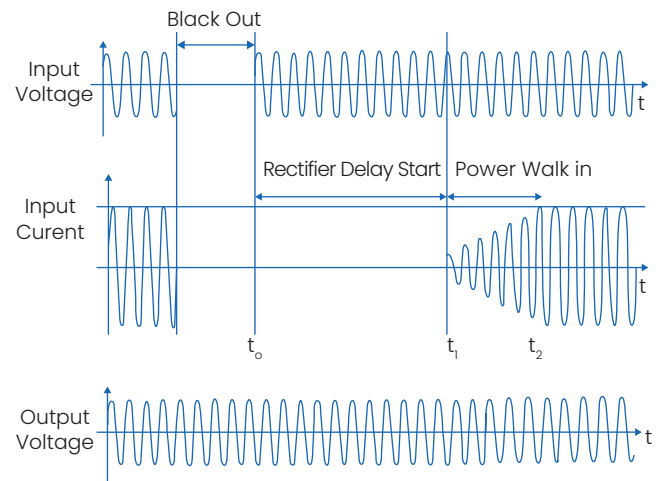
Battery configuration can be optimised with independent battery bank for each UPS or shared battery bank for multiple UPS which helps to optimize the selection of battery, space required for battery installation and the cost of installation.

Advanced 3 Level Topology

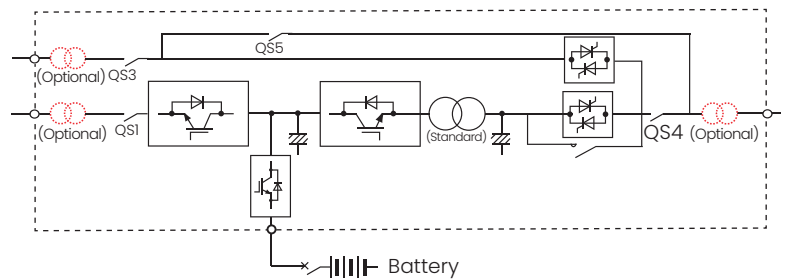
Falcon X5 series incorporates advanced 3 level technology. The Fuji Electric 3 level topology is more advantageous than conventional 3 level topology as losses can be reduced.

* Transformer is Provided at inverter output as default.
Transformer Position can be changed only @ factory

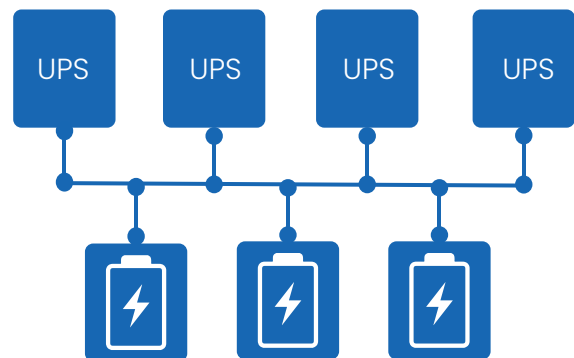
■ Rectifier Delay Start



■ 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.

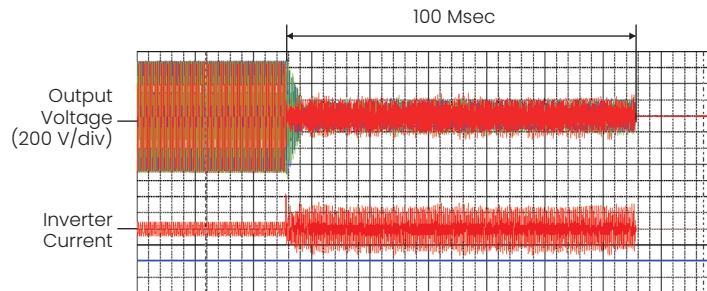
Ease of Access & User Friendliness

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

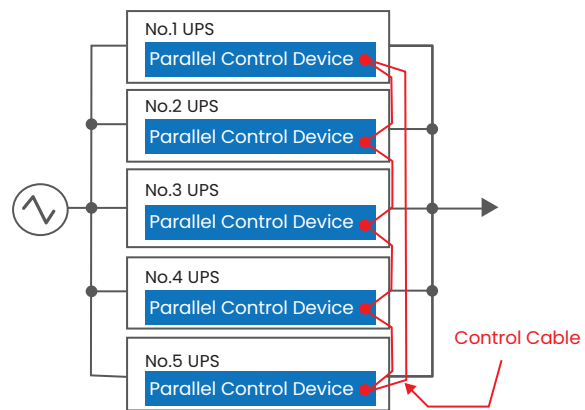
The Human Machine Interface (HMI) is intuitive and user friendly with a LCD screen and LED mimics. Easy identification of UPS working Status with the LED Glow bar.

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

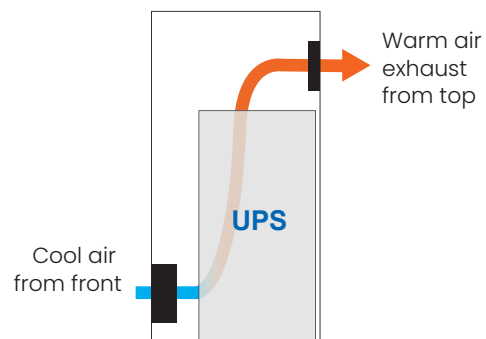
Short Circuit Current of UPS



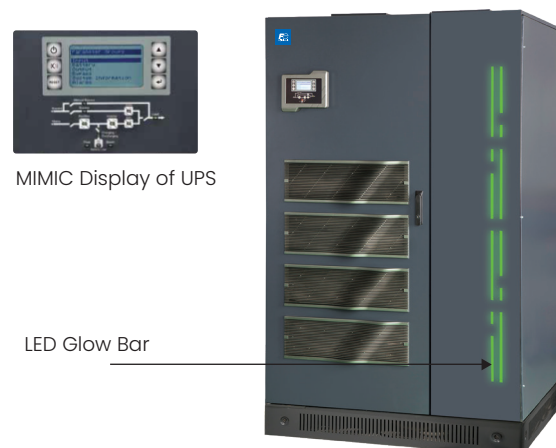
Parallel Control Logic



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.

Optimized 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 large saving in CAPEX and OPEX cost associated with UPS.

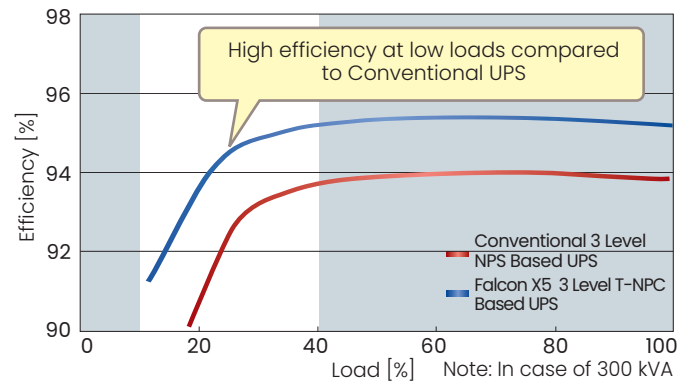
Long life power Electronic grade capacitors are being used in the UPS which does not require the replacement of capacitors during its lifetime.

Intelligent Eco Mode of Operation

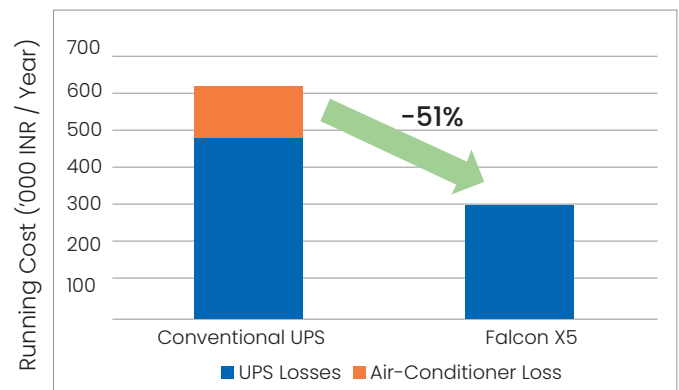
Falcon X5 has a intelligent high efficiency Eco Mode operations which can be enabled for energy savings (99% Efficiency).

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

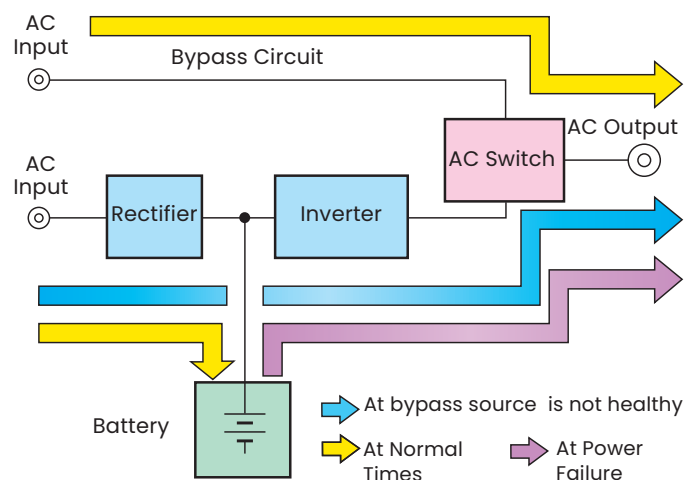


■ Energy Saving



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

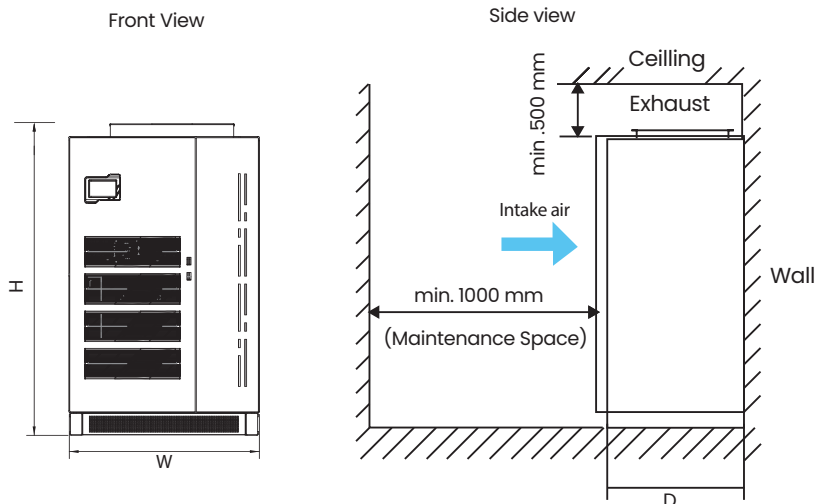
■ Eco-Mode Operation of UPS



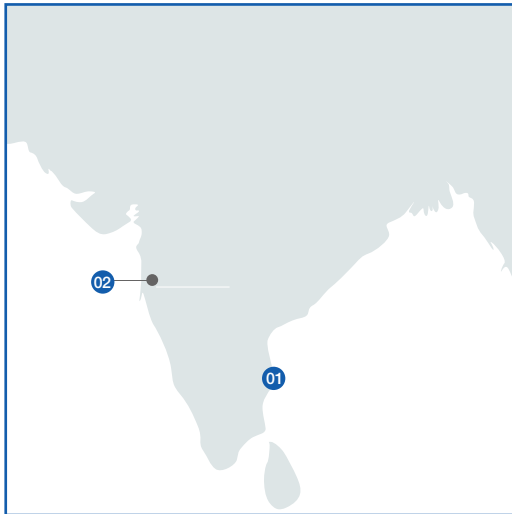
Technical Specification
Falcon x5
UPS 60-80-100-120-160-200-250-300 KVA

Series		Falcon X5							
Model	UPS Rating (KVA)	60	80	100	120	160	200	250	300
	UPS Rating (KW)	54	72	90	108	144	180	225	270
Input Parameters	Rated Voltage	400 V, 3 Phase + PE							
	Rated Voltage Tolerance	+20%, -40%*							
	Rated Frequency	50/60 Hz							
	Current Harmonic Distortion (THD)**	<3% at Load 100%							
Bypass Parameters	Rated Voltage	400 V \pm 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	\pm 1%							
	Crest Factor	3:1							
	Voltage Distortion at Linear Load	\leq 1% (Typical)							
	Voltage Distortion at Non-Linear Load (as per IEC62040)	\leq 3%							
	Frequency Stability with Inverter Synchronized to The By-Pass Mains	\pm 2% (Settable from \pm 1% to \pm 6%)							
	Voltage Phase Shift with Balanced and Unbalanced Load	$120^\circ \pm 1^\circ$							
	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 95.5% 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							
Compliance standards	Safety	IEC62040 - 1							
	Electromagnetic compatibility (EMC)	IEC62040 - 2							
	Performance	IEC62040 - 3							
	Product declaration	CE							
External Dimensions	Width (in mm)	800	800	800	800	840	1000	1200	1200
	Depth (in mm)	900	900	900	900	900	1000	1000	1000
	Height (in mm)	1700	1700	1700	1700	1800	2090	2090	2090
	Weight (in Kgs)	800	850	900	980	1200	1290	1580	1650

*at Part Load
**THDv @ <1%

UPS Main Unit


A series of horizontal dotted lines spanning the width of the page, intended for handwritten notes or text.



South Asia

● Fuji Electric India Pvt. Ltd.

- 01 Head Office & Chennai Factory
119,120,120A,
Electrical and Electronics Industrial Estate,
Perungudi, Chennai - 600 096,
Tamil Nadu, India
- 02 Pune Factory
Survey No. 36/1/1,36/3/1,27/1/3,
Taluka Haveli, Landmark - Handewadi Chowk
Pune - 412308
Maharashtra, India



Southeast Asia

- 03 **Fuji Electric (Thailand) Co., Ltd.**
43 Thai CC Tower, 11th FL.
Room 1st14-9, South Sathorn Road,
Yannawa, Sathorn, Bangkok , 10120,
Thailand
Tel : +66-2210-0615
Website: <https://www.th.fujielectric.com>
- 04 **Fuji Electric Manufacturing (Thailand) Co. Ltd**
118/2 Moo 18 Klong Nueng, Klong Luang,
PathumThani 12120 Thailand
Website: <https://www.th.fujielectric.com>
- 05 **Fuji Electric Sales Malaysia Sdn. Bhd.**
Unit #13A-15, Menara Q Sentral, No. 2A,
Jalan Stesen Sentral 2, Kuala Lumpur Sentral,
50470 Kuala Lumpur W.P., Malaysia
Tel : +60-(0)3-2780-9980
Website : <https://www.my.fujielectric.com>
- 06 **Fuji Electric Asia Pacific Pte. Ltd.**
151 Lorong Chuan #03-01/01A,
New Tech Park Lobby A,
Singapore 556741
Tel : +65-6533-0014
Website : <https://www.sg.fujielectric.com>
- 07 **Fuji SMBE Pte. Ltd.**
No.15 Senoko Avenue
Singapore 758305
Tel: +65 756 0988
website: <http://smbe.fujielectric.com>
- 08 **PT Fuji Electric Indonesia**
Wisma 46 - Kota BNI , 12TH Floor Suite #12.05-07,
Jalan Jenderal Sudirman Kav.1 Jakarta Pusat 10220,
Indonesia
Tel : +62-21-574 4571
Website : <https://www.id.fujielectric.com>
- 09 **Fuji Electric Vietnam Co., Ltd.**
Room 401,41h Floor , Corner Stone Building,
16 Phan Chu Trinh, Hoan Kiem, Ha Noi , Vietnam
Tel : +84-24-3935-1593
Website : <https://www.vn.fujielectric.com>
- 10 **Fuji Electric Sales Philippines Inc.**
Unit F , 8TH Floor, Inoza Tower, Lot 8 & 11, Block 32 ,
40th Street, North Bonifacio, BGC, Tagig City
Tel :+63-2-541-8321
Website : <https://www.ph.fujielectric.com>
- 11 **Fuji Electric Co., Ltd.(Myanmar Branch Office)**
Room No.311, 3rd Floor, Prime Hill Business Square,
No. 60, Shwe Dagon Pagoda Road, Dagon Township,
Yangon, Myanmar
Tel : +95-1-8382714
Website : <https://www.fujielectric.com>
- 12 **Fuji Electric Co., Ltd.**
7th Floor Vattanac Capital, No. 66 Preah Manivong Blvd,
Sangkat Wat Phnom, Khan Daun Penh, Phnom Penh,
Cambodia
Tel :+855-(0)23-964-070
Website : <https://www.fujielectric.com>