e-Front runners

Large-capacity

Uninterruptible Power System (UPS)

20 to 320 kVA

Fuji Electric Systems Co., Ltd.

REC 82-5

Fuji's UPS for today's computerized

On-line support for all applications

Data communication devices and computers constitute the backbone of society today and so require utmost reliability. First and foremost, a stable power supply without momentary failures is indispensable. Fuji Electric dominates the market for UPS which protect such devices and systems against power failures and disturbances.
The Fuji UPS 7000F series features the latest in power electronics, systems, digitization and high-frequency switching. It also offers outstanding load matching and suppression of harmonic currents commonly found in electronic devices.

UPS: Uninterruptible Power System

- Internet data center
- Financial institutions (banks, insurance companies, securities firms)
- Public services (satellites, broadcasting, media, telecommunications)
- Totalizer systems (horse races, cycle races)
- Traffic control systems (aviation, railroad, automobile)
- Plants (power, chemical, etc.)
- New media (VAN, INS, etc.)
- Other (information processing services, medical systems, etc.)

UPS 7000F Series

Features

All IGBT type UPS

PWM rectifier

- High input power factor: 0.98 or higher (almost 1.0)
- Low input harmonic content: 4% or less (needs no external filter)
- Power walk-in function provided as standard (soft shift of load to emergency generator)

High-frequency PWM inverter

- Performance optimum for computer load.
  Under rectifier load, the waveform distortion is small (below 3.5%), and the transient voltage variation is also small.

Efficiency of 91% or more

- Latest IGBTs
- Latest circuit design

High performance

- Uninterruptible feed by all-time inverter type
- Wide range of input voltage: 380V –20 to +15%
- Overload capacity: 125% for 10min , 150% for 10s

High reliability

- Fewer parts thanks to latest devices
- Screening test, burn-in test, high quality control
- High quality backed by strong track record

Long-life battery as standard

- The standard rectifier can charge a long-life battery.

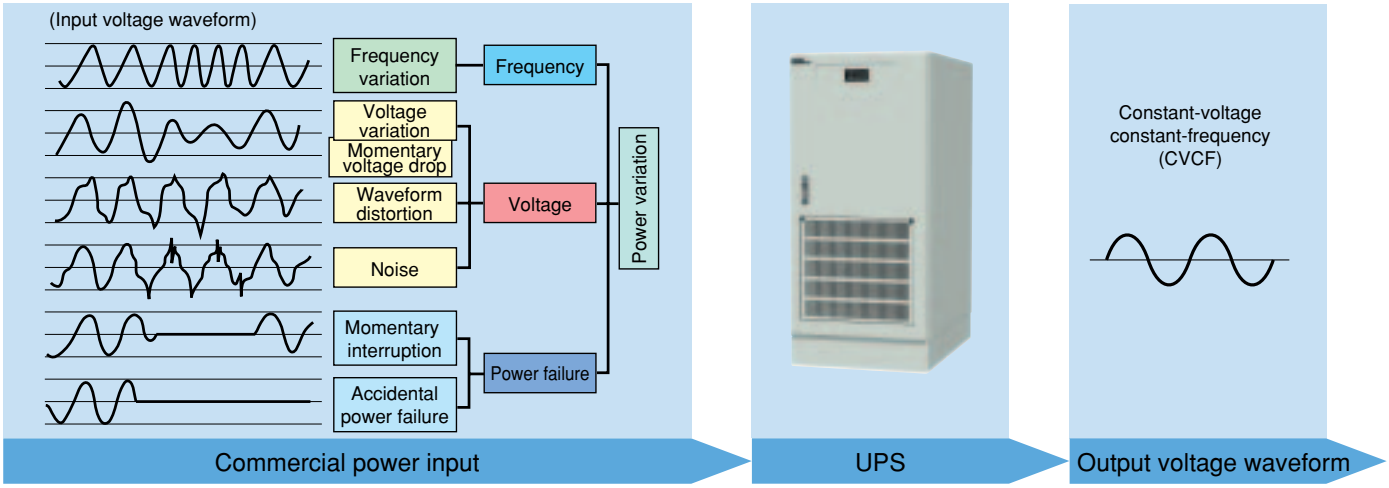
Can be used for many types of system

- Synchronized and uninterrupted switching with bypass
- Standby redundancy system
- Parallel redundancy system (N = 8)
- Battery control function (automatic deterioration diagnosis, replacement advance notice indication)
- Guidance function

Registration No. : EC97J1061
Date of registration : August 26, 1997

Kobe Works, where this instrument is manufactured, is certified by ISO 14001 environmental compliance.

Full protection from power disturbances



High reliability and high performance proven by track record

High performance by high-speed switching

High-performance IGBTs (Insulated Gate Bipolar Transistors) achieve higher frequency switching and larger current characteristics than conventional bipolar transistors, and are the next-generation IGBTs.

High reliability ensured by IGBT power module

High reliability and maintainability are essential for IGBT power modules in particular. On the module, therefore, IGBTs, fuses, drive circuitry, etc. are integrated, and a large current substrate is adopted for wiring, thereby assuring high reliability.


DK10781-2

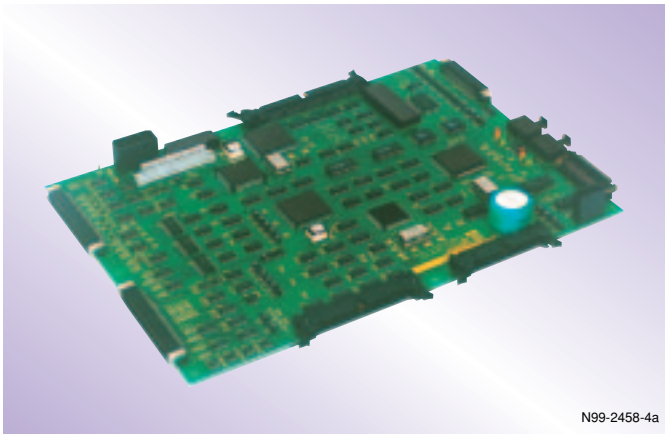
Innovation by all-digital control

All-digital design by latest control processor

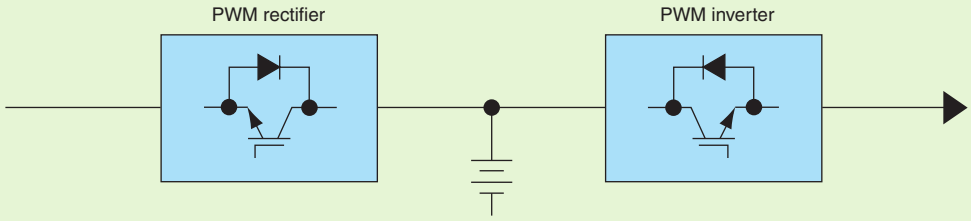
The all-digital design with high-performance processor, DSP (Digital Signal Processor), RISC (Reduced Instruction Set Computer) and ASIC (Application Specified IC) has allowed the number of parts to be considerably reduced, thereby enhancing reliability.

High reliability ensured by separating the control section and monitoring section

The reliability is enhanced by separating the control section and monitoring section, and designing the monitoring section in double systems, software and hardware.


N99-2458-4a

All IGBT type UPS



PWM rectifier

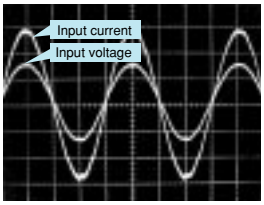
Suppresses input harmonic currents

The momentary waveform control function controls the rectifier input current to be sinusoidal at all times, thereby suppressing adverse effects on emergency private generators or power capacitors.

Higher input power factor

The power factor of the input power for the rectifier is controlled to 1.0. Therefore, reactive power disappears, thereby reducing the input power.

Input voltage and current waveforms



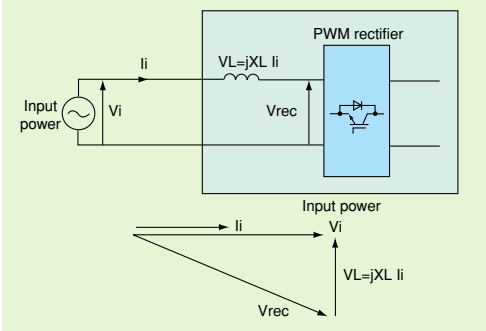
DK7520

Shock-less operation of input power

The operation is shock-less thanks to power walk-in control (at UPS starting, turning-on of private generator, power recovery, etc.)

Operation of PWM converter

The voltage on the PWM rectifier side is controlled so that the input current will be sinusoidal and in phase with the input voltage.

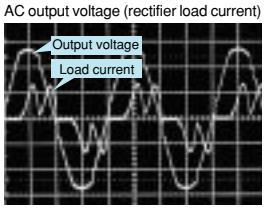


PWM inverter

Always clean sinusoidal voltage

Fuji's own digital instantaneous waveform control outputs a voltage of a clean sinusoidal waveform even under rectifier load such as computer load.

AC output voltage (rectifier load current)

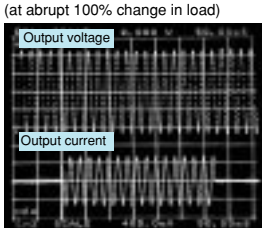


DK7518

Output voltage free from excessive transient variations

The output voltage remains almost unchanged even when the load abruptly changes from 0 to 100% or vice-versa.

Output voltage waveform
(at abrupt 100% change in load)



DK4908-1

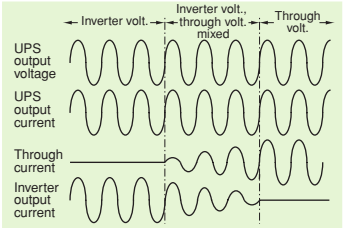
Voltage is balanced even when the load is unbalanced between phases

Distinct control of three voltage phases ensures that the voltage is balanced even when the load is unbalanced between phases.

Suppresses the voltage variation at bypass switching

Soft shift of load allows switching with bypass, free from excessive voltage variations.

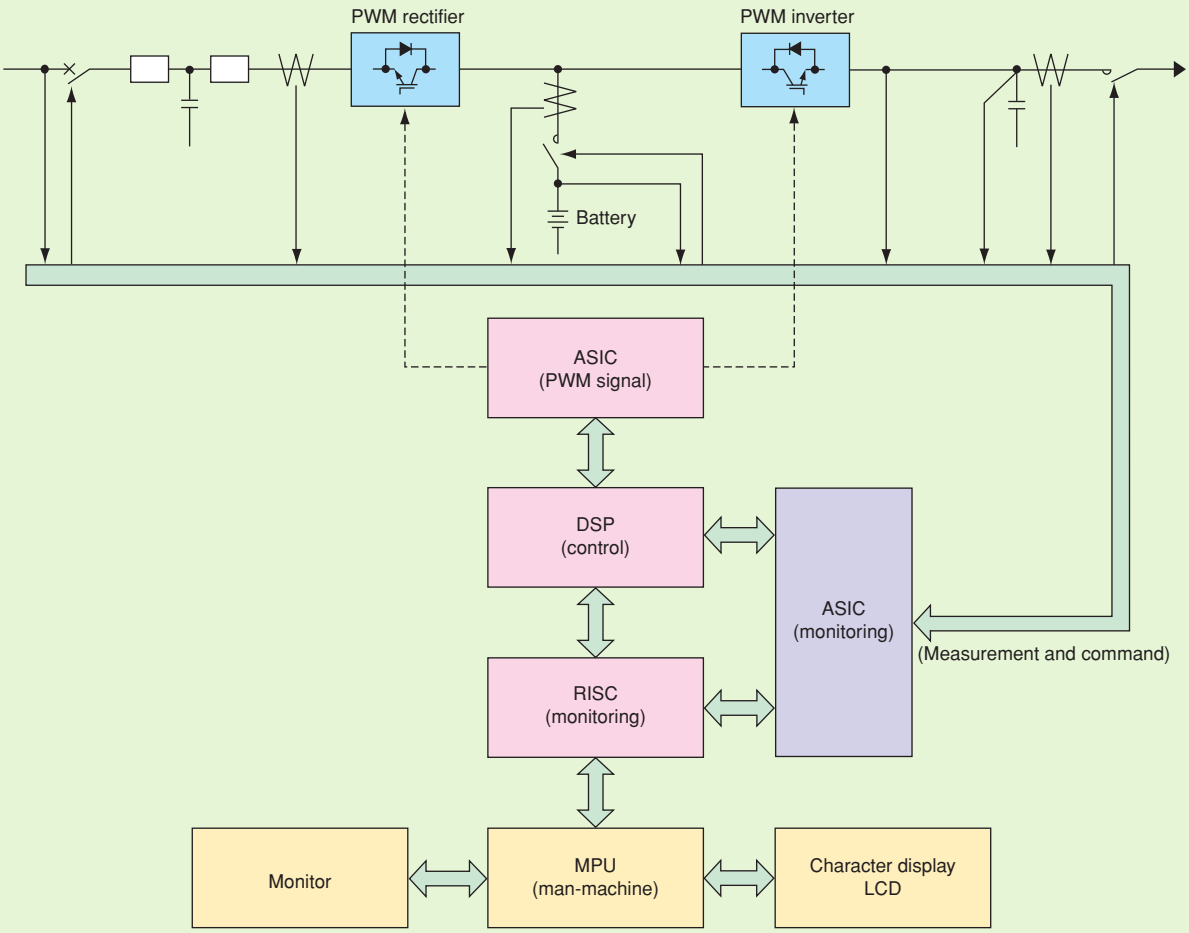
Output voltage waveform
(switched to through feed under 100% of load)



High reliability and high performance with perfect DDC control

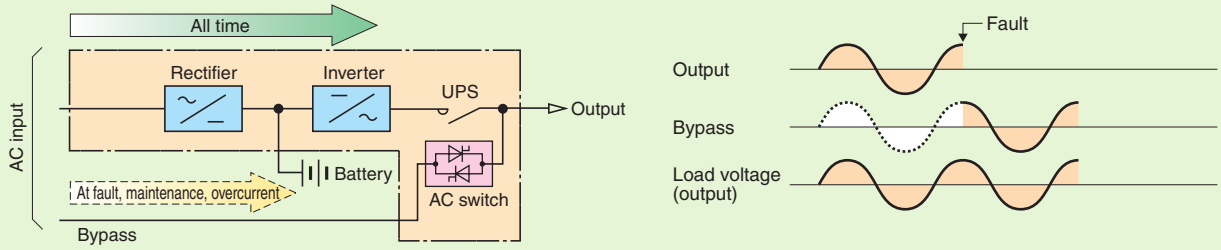
The latest control devices (processor, DSP, RISC, ASIC, etc.) and control techniques combine to deliver ideal UPS performance.

- Fewer parts improves reliability
- Powerful self-diagnostic function
- Sophisticated control, such as momentary value prediction
- Communication, indication, guidance, failure log, event information provided as standard
- Digital adjustment minimizes influences of secular change or temperature variation

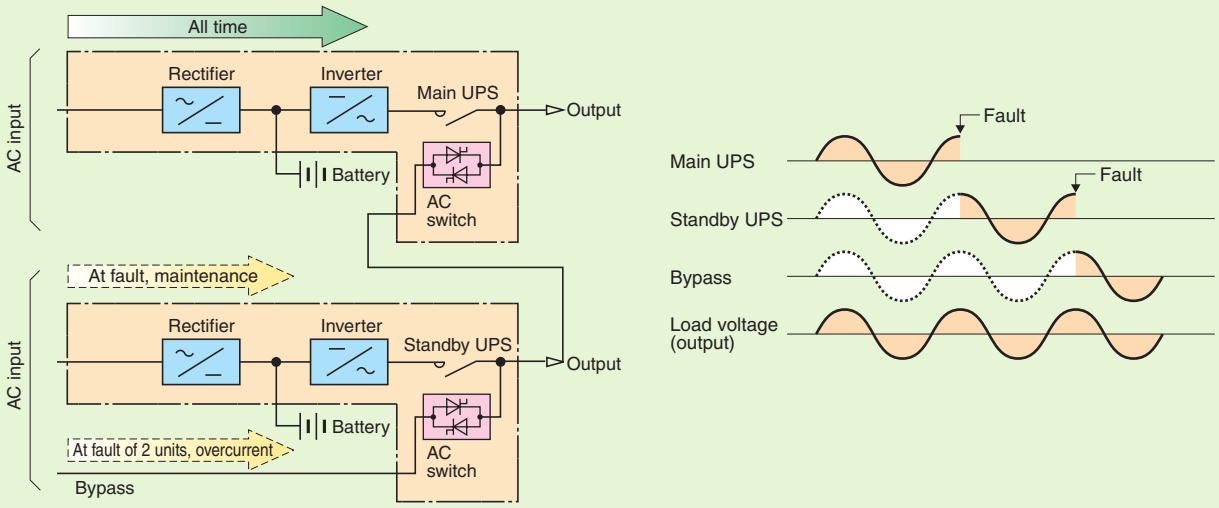


High-reliability power system

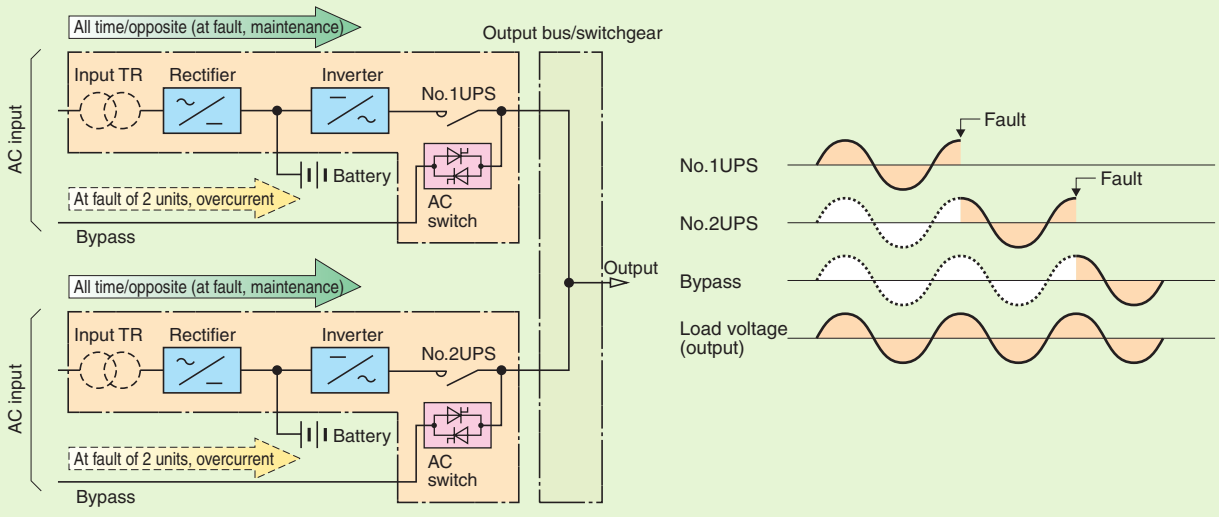
System of synchronized and uninterrupted switching with bypass



Standby redundancy system



Parallel redundancy system



Rated specifications

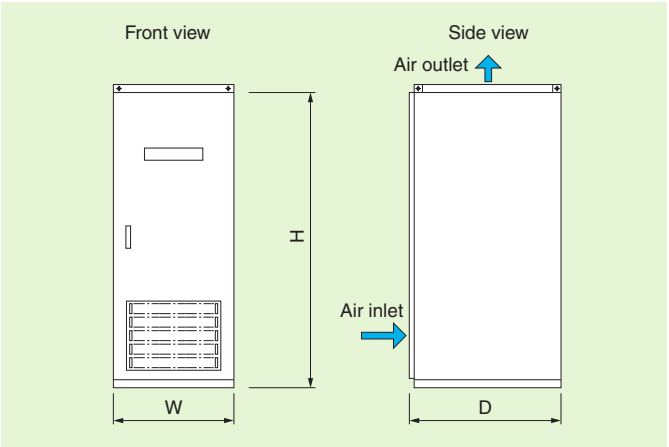
Type		UPS7000F–	3/20	3/30	3/50	3/80	3/100	3/160	3/200	3/240	3/320
Rated capacity		[kVA/kW]	20/16	30/24	50/40	80/64	100/80	160/128	200/160	240/192	320/256
Power supply system			Inverter power supply at all times								
Bypass			Synchronized and uninterrupted switching with bypass								
Input	Rated voltage	[V]	380								
	Voltage variation range		–20% to +15% (304 to 437V)								
	Rated frequency	[Hz]	50								
	Frequency variation range		±5%								
	No. of phases and wires		3-phase, 4-wire								
	Harmonic current		5% max.								
	Power factor		0.98 min. (at rated operation)								
Bypass	Rated voltage	[V]	380								
	Rated frequency	[Hz]	50								
	No. of phases and wires		3-phase, 4-wire								
Nominal DC voltage			396V (lead-acid battery, 198 cells)								
DC voltage variation range			336.6 to 455.4V								
Output	No. of phases and wires		3-phase, 4-wire								
	Rated voltage	[V]	380								
	Rated frequency	[Hz]	50								
	Load power factor		0.7 (lag) to 1.0 (rated value: 0.8 lag)								
	Rated current	[A]	30.4	45.6	76	121.6	151.9	243.1	303.9	364.7	486.2
	Voltage accuracy (at settling)		±1%								
	Transient voltage variation		(1) ±5%: at abrupt load change from 0 to 100% or vice-versa								
			(2) ±2%: at abrupt ±10% change of input voltage								
			(3) ±2%: at failure/recovery of commercial power								
			(4) ±5%: at switching from UPS to bypass or vice-versa (at rated bypass voltage)								
	Settling time		50ms max.								
	Harmonic distortion		3% max. (under 100% linear load), 5% max. (under 100% rectifier load)								
	Voltage unbalance		±3% (under 100% unbalanced load)								
	Frequency accuracy		0.01% (for internal oscillation)								
	External synchronization range		±1% (at bypass synchronization)								
	Overload capacity		125% for 10min, 150% for 10s								
	Voltage adjustable range		±5% (under rated load)								
Others	Ambient temperature		–10 to +40˚C (operating), +18 to +27˚C (recommended)								
	Relative humidity		30 to 90% (no condensation)								
	Heat loss	[kW]	2	3	5	7	8	13	16	20	25
	Altitude		1000m max.								
	Communication interface		RS-232C, SNMP (option)								

External dimensions

UPS dimensions

Capacity [kVA]	Dimensions [mm] W	D	H	Mass [kg]
20	500	800	1150	270
30	500	800	1150	300
50	600	1000	1625	440
80	600	1000	1625	500
100	650	1000	1950	800
160	1200	1000	1950	1250
200	2000	1000	1950	2000
240	2400	1000	1950	2200
320	2800	1000	1950	2800

Note: Dimensions given are per system of synchronized and uninterruptible switching with bypass.



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