Germarel GmbH AND POWER CONVERSION SYSTEMS

Germarel GmbH and Power Conversation Systems

Germarel GmbH was established in 2011 by executives and engineers from Germany's Power Electronics Company, established in 1977 with experience more than 40 years.

Germarel GmbH has been growing rapidly ever since by combining this '40 years of know-how' with new Technologies. This proficiency in Development and Manufacturing ensures Germarel GmbH to rank among the top players in the industry.

Germarel GmbH is a manufacturer and integrator mainly for Rectifiers, Inverters, Converters, Industrial Type UPSs, and Static Voltage Regulators, etc. In addition, we also provide commercial standard products

Germarel GmbH is the first choice of many businesses from different industries due to its customized, client specific power solutions. We produce the fastest and the most efficient solutions while using the most appropriate products needed by our customers and business partners.

Germarel GmbH has strong local and international business partnerships.

Our priority is to sustain upmost customer satisfaction. Germarel GmbH will continue to grow by leveraging the accumulated knowledge and experience it has, while continuously adapting to new technologies, to produce efficient and reliable energy systems. And the synergy we create with all our customers will be the locomotive for our enthusiasm to achieve our goals

3000 m Factory located in İstanbul

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Research and Development

Germarel GmnH gives great importance to research and development. 10% of our budget is dedicated to our R&D Department. Our top tier R&D Team Works around the clock to make a difference. For us, R&D is the main foundation in attaining our goal to become a worlwide renown Power Electronic Company.

High Quality Consciousness

High quality is the most essencial principle of our company. Therefore, we only choose providers that have significant quality conciousness with both Local and International sertificates.

All our products are being tested 100% and they undergo strict quality control processes. Our company has ISO 9001 and ISO 14001 quality certificates.

After Sale Support

We call it 24/7 uninterrupted support!

Technical Support is being provided for all products,wheter manufactured or marketed by Germarel GmbH, Our technical service team is at your service 24/7 all year around.

Export

We export our products to more than 60 countries on 4 continents. Export is a major part of our business; approximatelt 50% of our annual income is sourced by Export activities

Some of the countries we mainly export to are; USA, Germany, Denmark, Netherlands, Bosnia and Hersegovina, Singapore, Vietnam, Mexico, Brazil, Argantina, Saudi Arabia, Jordan, Iraq, UAE, etc.

References

Nordex Energy GmbH	Germany
ADNOG	UAE
Electromach B.V	Netherland
ALARKO	Turkey
ALPHA	Turkey
ALPHA TECHNOLOGIES	Canada, Brazil
ALSAI	Peru
ALSTOM	Turkey, Albania
ANEL	Turkey
ANDRITZ HYDRO	Turkey - Ecuador - Georgia Peru- Norway- Colombia
ARAMCO	Saudi Arabia
ASELSAN	Turkey
APEEL Science	USA
Atalaya mining	SPAIN
ADMA	UAE
CENGİZ ENERJİ	Turkey
ÇALIK ENERJİ	Turkey - Yemen - Georgia Uzbekistan - Turkmenistan
Damenshipyerd	Romania
ENERJİ SA	Turkey
ENKA & INTERGEN	Turkey
ESA GRIMMA	Germany
ETİ ALUMİNYUM	Turkey
EXXON MOBIL	Global
GAMA	Turkey
GENERAL ELECTRIC	Turkey, Pakistan
GES ELECTRIC	Turkey, Georgia
IMTECH	Netherlands
VR Electric	Kithuania
JOULZ	Netherlands
KARADENİZ ENERJİ	Turkey
KARSAN (PEUGEOT)	Turkey
Westek Electronics	Australia
LAFARGE	Turkey
MAXIMUM POWER	Jordan
MERAM	Turkey
METRO ELEKTRİK	Turkey, Uzbekistan
OMV	Turkey
OPERATIF	Turkey
POWIN	USA
REJMAN CO.	Iraq
SAVRONİK A.Ş.	Turkey
SIEMENS	Turkey, Libya
SOYUT WIND	Turkey
TAQA	Netherlands
TEİAŞ	Turkey
TENNET	Netherlands
TOFAŞ (FIAT)	Turkey
TREDAŞ	Turkey
TURKISH NAVY	Turkey
TURKCELL	Turkey
ULUSOY ELECTRIC	Turkey, Algeria
USLUEL ENERJİ	Afganistan
UNIMEX	Denmark

REC-GER Series 1 phase

GENERAL SPECIFICATIONS

- 1 phase input (model dependent)
- Internal isolation transformer at input
- Full controlled conventional rectifier
- Smart control and high reliability with DSP (Digital Signal Processor)
- Float charge, equalizing charge and boost charge modes
- Automatic and manual charge modes
- Low output voltage ripple and high reliability
- 2x16 character LCD display, showing measurements, status and alarm messages
- Soft start
- Led displays for easy observation of Rectifier status. Audible alarm.
- Programmable current limitation
- Operation as voltage source or current source
- Calibration of measurements from front panel
- Language selection from front panel (English / German / Turkish / Dutch / Portuguese)
- DC Low / High, Line Failure, Over Temperature, Short Circuit protections
- Ability to program all operation parameters (password protected)
- Programmable alarm relay contact outputs (4 standart, up to 16 relays as option)
- Possibility of monitor and control over RS232-RS485.
- Modbus communication.
- Log records with date and time stamp up to 200 events.
- 24 V / 48 V / 110 V / 220 V output options

OPTIONS

- Active parallel (current sharing) operation up to 4 devices
- Ability to monitor batteries and battery low alarm, even when the AC input fails
- Battery temperature compensation
- Easy observation via analog gauges (Input / Output / Battery Voltages / Currents)
- Battery test with adjustable voltage and duration
- Transducers for input / output voltage(s) / current(s) (4-20mA and 0-10V)
- 12 pulse option to limit input current distortion.
- Internal cabinet light / anticondensation heater.
- Earth leakage monitoring
- Power Factor measurement
- Input Power / kVA / kW measurement
- Touch Screen

REC-GER Series 1 phase

TECHNICAL SPECIFICATIONS	
MODEL	**1 PHASE INPUT**
INPUT	
Rectifier Topology	6 or 12 pulse Thyristor controlled
Nominal Voltage	110VAC / 127VAC / 208VAC / 220VAC / 230VAC / 240VAC
Nominal frequency	50 or 60 Hz
Transformer	Galvanically isolated
ITHD	<45-50% standard
Input Protection	Thermic Magnetic Overcurrent protection MCB, Overvoltage protection
OUTPUT	
Nominal Output Voltage	12 VDC / 24 VDC / 48 VDC / 110 VDC / 220 VDC
Output Voltage Adjustment	70% to 130% of Nominal Output Voltage
Output Current Adjustment	0 -100% of Nominal Output Current
Battery Charging Current	0 -100% of Nominal Output Current
Boost Charger Voltage	100% to 120% of Floating Output Current
Boost Voltage(V/C)	2,4 lead acid Battery 1,60 NiCd Battery
Float Voltage(V/C)	2,24 lead acid Battery 1,40 NiCd Battery
Nominal Output Current	0 to 100A
Max Output Current	110 % of nominal output current
Filtering	LC Filter
GENERAL PROTERTIES	
Boost Timer	0-600 hours adjustable
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)
Isolation Voltage	1500 or 3000VAC input/chassis and output/chassis
Efficiency at full load	>80%
Protection level	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)
Cable Entry	Front Bottom
Access to Batteries	Batteries and rectifier in the same cabinet with front access(Optional)
Circuit Breakers	Thermic-magnetic circuit breakers for input, Battery and Load (up to 100A)
Reset Button	Used for re-operation in case of fallure of the system.
Measurments	Load Voltage/Current; Battery Voltage/Current; Utility Voltage; Line Voltage; Frequency; Power Factor
ENVIRONMENT	
Acoustic Noise	45 - 55 dB (according to Power Rating)
Storage Temperature	(-20 °C) – (+70 °C)
Operating Temperature	(-5°C) - (+50°C)
Relative Humidity	0 - 95% Non-condensing
Max Installation Height	1000m (-1% Power for every 100m after 1000m) Max. 4000m
Color	RAL7035, RAL7032 (Standard), others (Optional)
COMMUNICATION & PARALLELING	
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)
Paralleling	Active, Passive, Standby
STANDARDS	
Standards	IEC62040-1, IEC62040-2, ISO9001, ISO14001, CE Decleration

REC-GER Series 3 phase

GENERAL SPECIFICATIONS

- 3 phase input (model dependent)
- Internal isolation transformer at input
- Full controlled conventional rectifier
- Smart control and high reliability with DSP (Digital Signal Processor)
- Float charge, equalizing charge and boost charge modes
- Automatic and manual charge modes
- Low output voltage ripple and high reliability
- 2x16 character LCD display, showing measurements, status and alarm messages
- Soft start
- Led displays for easy observation of Rectifier status.
- Audible alarm.
- Programmable current limitation.
- Operation as voltage source or current source.
- Calibration of measurements from front panel.
- Language selection from front panel. (English / German / Turkish / Dutch / Portuguese)
- DC Low / High, Line Failure, Over Temperature, Short Circuit protections
- Ability to program all operation parameters (password protected)
- Programable alarm relay contact outputs (4 standart, up to 16 relays as option)
- Possibility of monitor and control over RS232-RS485.
- Modbus communication.
- Log records with date and time stamp up the 200 events.
- 24 V / 48 V / 110 V / 220 V output options

OPTIONS

- Active parallel (current sharing) operation up to 4 devices.
- Ability to monitor batteries and battery low alarm, even when the AC input fails.
- Battery temperature compensation.
- Easy observation via analog gauges (Input / Output / Battery Voltages / Currents).
- Battery test with adjustable voltage and duration.,
- Transducers for input / output voltage(s) / current(s) (4-20mA and 0-10V).
- 12 pulse option to limit input current distortion.
- Internal cabinet light / cabinet anticondensation heater.
- Earth leakage monitoring.
- Power Factor measurement
- Input Power / kVA / kW measurement
- Touch Screen

REC-GER Series 3 phase

TECHNICAL SPECIFICATIONS	
MODEL	**3 PHASE INPUT**
INPUT	
Rectifier Topology	6 or 12 pulse Thyristor controlled
Nominal Voltage	3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)
Nominal frequency	50 or 60 Hz
Transformer	Galvanically isolated
ITHD	<30-35% standard, <10% on 12pulse (Optional)
Input Protection	Thermic Magnetic Overcurrent protection MCB, Overvoltage protection
OUTPUT	
Nominal Output Voltage	12 VDC / 24 VDC / 48 VDC / 110 VDC / 125VDC / 220 VDC
Output Voltage Adjustment	70% to 130% of Nominal Output Voltage
Output Current Adjustment	0-100% of Nominal Output Current
Battery Charger Current	0-100% of Nominal Output Current
Boost Charger Voltage	100% to 120% of Floating Output Current
Boost Voltage(VAC)	2,4 Lead Acid Battery 1,50 NiCd Battery
Float Voltage(VAC)	2,24 Lead Acid Battery 1,40 NiCd Battery
Nominal Output Current	0 to 10000A (According to request)
Max Output Current	110% of nominal output current
Filtering	LC Filter
GENERAL PROPERTIES	
Bost Timer	0-99.9 hours adjustable
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)
Isolation Voltage	1500 or 3000VAC input/chassis and output/chassis
Efficiency at full load	85% to 93% (According to Capacity)
Protection level	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)
Cable Entry	Front Bottom
Access to Batteries	Batteries and rectifier in the same cabinet with front access (optional)
Circuit Breakers	Thermic-magnetic circuit breakers for input, Battery and Load (up to 100A)
Reset Button	Used for re-operation in case of fallure of the system.
ENVIRONMANTAL	
Acoustic Noise	45 - 65 dB (according to Power Rating)
Storage Temperature	(-20 °C) – (+70 °C)
Operating Temperature	(-5°C) - (+50°C)
Relative Humidity	0 - 95% Non-condensing
Max Installation Height	1000m (-1% Power for every 100m after 1000m) Max. 4000m
Color	RAL7035, RAL7032 (Standard), others (Optional)
COMMUNICATION & PARALLELING	
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)
Paralleling	Active, Passive, Standby
STANDARDS	
Standards	IEC62040-1, IEC62040-2, ISO9001, ISO14001, CE Decleration

NOTE: All specifications are subject to change without notice. Consult Germarel's Technical Support Department for special applications.
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INV-GER Series

GENERAL SPECIFICATIONS

- Input and output breakers
- 1kVA to 600kVA power options
- Output isolation transformer
- 50 to 400Hz output
- 50Hz/60Hz adjustable frequency
- By-Pass input correction interruptable
- interruptable by-pass option
- Compatible with inrush current devices
- Short circuit protection
- Parallel working and scaling (option)
- 2x16 LCD display to monitor the output, input voltage and current
- Line voltage low/high, output voltage low/high, over temperature, and IGBT/Mosfet fault and alarms
- Through RS232 or RS485(optional) Modbus Communication
- Advanced PC control and monitoring program.
- Monitoring and controlling of all operational parameters by the LCD Display
- Automatic or Manual Start
- Language selection on LCD display
- Log records up to 200 events
- Controlling with an external input
- Perfect dynamic answer
- Soft Start
- LED's on the front panel
- Standing or rack type cabinet
- Voltage & Current Transdusers
- Relay Output

TECHNICAL SPECIFICATIONS

INPUT			
Inverter Type	RACK TYPE (1 PHASE)	TOWER TYPE (1 Phase)	3 PHASE
Power (kVA)	1kVA to 10kVA	1kVA to 200kVA	3kVA to 600kVA
Voltage (VDC)	24VDC to 220VDC	24VDC to 220VDC	24VDC to 432VDC
Frequency (Hz)	50 to 400Hz		
OUTPUT			
Voltage (V)	110VAC, 127VAC, 220VAC, 230VAC, 240VAC		3*220VAC to 3*600VAC
Power (kVA)	1kVA to 10kVA	1kVA to 200kVA	3kVA to 600kVA
Power (kW)	800W to 10kW	800W to 200kW	240W to 600kW
Frequency (Hz)	50Hz/60Hz/83 1/3Hz/400Hz	50Hz/60Hz/83 1/3Hz/400Hz	50Hz/60Hz/83 1/3Hz/400Hz
Power Factor	0.8 to 1	0.8 to 1	0.8 to 1
Crest Factor	3:1	3:1	3:1
THDu	< 4%	< 4%	< 3%
Efficieny	> 83%	> 83%	> 87%
SYSTEM PROPERTIES			
Design Life	20 years		
Protection Class	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)		
Storage Temperature	(-20 °C) – (+70 °C)		
Operating Temperature	(-5°C) - (+50°C)		
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)		
Altitude	1000m (-1% Power for every 100m after 1000m) Max. 4000m		
Relative Humidity	0 - 95% Non-condensing		
Noise (1m away)	<55db		<65dB
Color	RAL7035, RAL7032 (Standard), others (Optional)		
Cable Entry	Front Bottom (Top entry optional), Back/Front (Rack Type)		
STANDARDS			
Standards	IEC60146, IEC62040-1, IEC62040-2, ISO9001, ISO14001, CE Decleration		

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STS-GER Series 1 phase

GENERAL SPECIFICATIONS

- Smart control and high reliability with DSP (Digital Signal Processor)
- Thyristor controlled switching (fully static)
- Automatic and manual transfer modes
- 2x16 character LCD display, showing measurements, status and alarm messages, led test
- Graphic touchscreen user interface module (HMI) Option
- Led displays for easy observation of static transfer switch status. Audible alarm.
- Internal maintenance bypass switch
- Internal, redundant and monitored power supplies
- Calibration of measurements from front panel
- Language selection from front panel (English / German / Turkish / Dutch / Portuguese)
- Input Low / High, Output Low / High, Over Temperature, Short Circuit protections
- Ability to program all operation parameters (password protected).
- Common alarm relay output.
- Possibility of monitor and control over RS232-RS485.
- Modbus (RTU) communication.
- Log records with date and time stamp up the 200 events.
- Thyristor failure detection.
- Natural cooling up to a power level.
- Hot Swap (for 2U solutions)

OPTIONS

- 4 programable alarm relay contact outputs.
- Easy observation via analog gauges (input / output voltages / currents).
- Transducers for input / output voltage(s) / current(s) (4-20mA and 0-10V).
- Internal cabinet light / anticondensation heater.

TECHNICAL SPECIFICATIONS

MODELS	STS 1016	STS 1032	STS 1050	STS 1063	STS 1100	STS 1150
Current (A)	16	32	50	63	100	150
INPUT						
Input Voltage	110VAC / 127VAC / 208VAC / 220VAC / 230VAC / 240VAC					
Nominal frequency	50 or 60 Hz					
OUTPUT						
Output Voltage	110VAC / 127VAC / 208VAC / 220VAC / 230VAC / 240VAC					
Efficiency	> 98%					
Transfer Time	< 5ms @ 50 Hz, < 4,1ms @ 60 Hz					
SYSTEM PROPERTIES						
Weight (kg)	12 kg				16 kg	20 kg
Dimensions (1U = 44,45mm)	19 inch rack cabinet, Height: 2U, Depth: 400mm				19 inch rack cabinet, Height: 4U, Depth: 400mm	
Operation Tempereture	(-5°C) - (50°C)					
Storage Tempereture	(-20°C) - (70°C)					
Overload Capability	150 % for 1 minutes, 250% 20ms					
Acceptable Source Voltage Distortion	10 % Maximum					
Max Altitude	2000m					
Communication	Modbus Communication over RS232 Serial Port					
Dry Contact	1 Dry contact output dedicated for common alarm, 4 Dry Contacts (Optional)					
Colour	RAL7035, RAL7032 (Standard), others (Optional)					
Protection Level	IP20					
ALARMS AND COMMUNICATION						
Error Notice	Overload, Over Temperature, Fuse Failure, Maintenance Switch active.					
Maintenance Switch	On cabinet					
Communication	RS232(Standard), Dry Contact(Standard), RS485(Optional)					
Time - Date	Log Records up to 200 logs with Real Time Clock Calender					
Led Indicators	(Source1 Good, Source2 Good, Source1 On, Source2 On, Output OK, Common Alarm, Source1 Maint, Source2 Maint, Syncronisation Bad)					
Power Supplies	Redundant Internal Power Supplies					
Alarm	Audible Alarm					
Current Function	Load High Current Inhibit Function, which inhibits emergency transfer in case of very high currents like short circuits					
STANDARDS						
Applicable Standards	IEC62310-1, IEC62310-2, IEC62310-3, ISO9001, ISO14001, CE Decleration					

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Static Transfer Switches

STS-GER Series 3 phase

GENERAL SPECIFICATIONS

- Smart control and high reliability with DSP (Digital Signal Processor)
- Thyristor controlled switching (fully static)
- Automatic and manual transfer modes
- 2x16 character LCD display, showing measurements, status and alarm messages, led test
- Graphic touchscreen user interface module (HMI) Option
- Led displays for easy observation of static transfer switch status. Audible alarm.
- Low malfunction risk with 4 parallel redundant power supplies
- Internal maintenance bypass switch
- Internal, redundant and monitored power supplies
- Calibration of measurements from front panel
- Language selection from front panel (English / German / Turkish / Dutch / Portuguese)
- Input Low / High, Output Low / High, Over Temperature, Short Circuit protections
- Ability to program all operation parameters (password protected)
- Common alarm relay output
- Possibility of monitor and control over RS232-RS485.
- Modbus (RTU) communication.
- Log records with date and time stamp up the 200 events.
- Thyristor failure detection
- Natural cooling up to a power level

OPTIONS

- 4 programable alarm relay contact outputs.
- Easy observation via analog gauges (input / output voltages / currents).
- Transducers for input / output voltage(s) / current(s) (4-20mA and 0-10V).
- Internal cabinet light / anticondensation heater.

TECHNICAL SPECIFICATIONS

MODELS	STS 3050	STS 3100	STS 3150	STS 3200	STS 3300	STS 3400	STS 3500	STS 3600
Current (A)	50	100	150	200	300	400	500	600
INPUT								
Nominal Voltage-Sources	3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)							
Switched Input Phases	3(3-pole)(Standard), 3+N(4-pole)(Optional)							
Nominal Frequency	50 - 60 Hz							
Input FrequencyRange	±20 % (adjustable)							
Distribution Compatibility	IT, TT, TNS, TNC							
OUTPUT								
Output Voltage	3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)							
Transfer Type	"Break Before Make" (no overlapping sources)							
Transfer time for source failure	5.0ms @ 50Hz, 4.1ms @ 60Hz with Synchronized Sources; 10 msec with Unsynchronized Sources							
Efficiency at full load (%)	> 99 %							
ENVIRONMENTAL								
Noise level @ 1m (dB)	55			65				
Storage tempereture	(-20 °C) – (+70 °C)							
Ambient tempereture	(-5°C) - (+50°C)							
Relative humidity	0 - 95% Non-condensing							
Max installation height	1000m at rated power (-1% power for every 100m above 1000m)-Max 4000m							
Colour	RAL7035, RAL7032 (Standard), others (Optional)							
Protection level	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)							
ALARMS AND COMMUNICATION								
Communication	RS232(Standard), Dry Contact(Standard), RS485(Optional)							
Time- Date	Log Records up to 200 logs with Real Time Clock Calender							
Led Indicators	(Source1 Good, Source2 Good, Source1 On, Source2 On, Output OK, Common Alarm, Source1 Maint,Sourc2 Maint, Syncronisation Bad)							
Power Supplies	Redundant Internal Power Supplies							
Alarm	Audible Alarm							
Current Function	Load High Current Inhibit Function, which inhibits emergency transfer in case of very high currents like short circuits							
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)							
STANDARDS								
Applicable Standards	IEC62310-1, IEC62310-2, IEC62310-3, ISO9001, ISO14001, CE Decleration							

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UPS-GER

GENERAL SPECIFICATIONS

- DC or AC, or DC and AC inputs
- 3phase sine wave output
- Input and output 50 to 400Hz frequency
- Input/Output Galivanic Isolation Transformer
- Bypass Galivanic Isolation Transformer
- On Non-lineer loads (computer and switching power supplies) excellent performance
- Intelligent Power Module or IGBT technology full reliability.
- DSP (Digital Signal Processor) control.
- Space-vector control technology
- Low output distortion factor.
- High efficiency.
  Audible alarm
- User freindly control panel
- With an LCD display (2x16 / 4x20 all parameters can be programmed and monitored by touchscreen panel (option)
- Programmable dry contact outputs and
- Modbus communication.
- Pulse with modulation technology (PWM)
- All parameters can be adjusted on Display
- Input and output low and high voltage protection, over temperature protection abilities
- Remote control interface, central control, PC or modem connection
- International and local certificated
- Automatically start and fault recovery
- Input/output power and power factor measurement

TECHNICAL SPECIFICATIONS

INPUT	
Input Voltage (VAC)	Single Phase Input: 110VAC / 127VAC / 208VAC / 220VAC / 230VAC / 240VAC Three Phase Input: 3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)
Input Voltage Tolerance	+15 % / -10 %
Maximum Input Voltage	± 20 %
Nominal Frequency	50Hz - 60Hz
Frequency Tolerance	± 10%
Rectifier Topology	6 or 12 pulse Thyristor Controlled
Isolation Transformer	Standard (except 400Vdc Rectifiers)
OUTPUT	
Voltage	Single Phase Output: 110VAC / 127VAC / 208VAC / 220VAC / 230VAC / 240VAC Three Phase Output: 3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)
Power (kVA)	10 to 400kVA
Voltage Stability	± 1%
Rectification Time	Max 25ms. After Boost Charge
Frequency	50Hz - 1000Hz (on-demand)
Frequency Tolerance	+ 2% (schyncronized) adjustable, 0.01 (free run)
Efficiency (Operation from DC)	85% to 92%
Total Harmonic Distortion	< 3% @ lineer load, < 5% @ non-lineer load
Power Factor	0.8
Crest Factor	3 : 1
Overload	100% - 125% @ load 10mins. / 125% - 150% @ load 1 min. / >150% load: by-pass
Short-Circuit Protection	Electronic Short Circuit Protection
Technology	Space Vector Control
DIGITAL DISPLAYS	
LCD Display	Output Voltage / Output Current / Input Voltage / DC Bus Voltage / Inverter Frequency / Load Percentage / Load is/isn't powering up
Alarm Notifications (LCD)	Overload / No/Low Input / IGBT Fault / Over Temperature
Led Display	Input OK / Operation / Common Alarm
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)
SYSTEM PROPERTIES	
System Design Life	20 years
Protection Class	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)
Storage Temperature	(-20°C) to (+70°C)
Operating Temperature	(-10°C) to (+50°C)
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)
Altitude	000m (-1% Power for every 100m after 1000m) Max. 4000m
Relative Humidity	0 - 95% (Non-condensing)
Noise (1m away)	<55db (Single Phase), <65dB (Three Phase)
Color	RAL7035, RAL7032 (Standard), others (Optional)
Cable Entry	Front Bottom (Top entry optional)
STANDARDS	
Standards	50091-1, 50091-2, ISO9001, ISO14001, CE Decleration

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Unduatrial UPS

UPS-GER Series

GENERAL SPECIFICATIONS

- True On-line Topology / Sinusoidal Output
- IGBT / IPM Technology (Inverter Circuit)
- 12 or 6 Pulsed Thyristor Controlled Rectifier
- Galvanic Isolation at the Output of the Inverter
- Static and Mechanic Maintenance By-Pass
- Advanced Automatic and Manual Battery Test System
- Superior performance on non-linear loads.
- RS232 and Dry Contacts or RS485, Modbus Communication and Remote Monitoring.
- High Efficiency up to 94%.
- Space Vector Application.
- High Performance Design.
- Overload and Short Circuit Protection.
- Compatible with International Standards
- Soft Start
- Temperature Compensated Battery Charging
- Hot Standby Configuration
- Advanced 2x16 or 4x20 LCD Panel Providing detailed Information on Input/Output Voltage, Battery Voltage, Charging Current.
- Interior Temperature and Setting User Selectable Parameters
- 200 Recorded Event History.
- Alarm Logging with date and time
- Compact and Quiet.
- Guarantee of 10 years spare parts availability.
- 24 Hours Emergency Technical Support.

Options:

- Parallel Aplication, Touchscreen Display, IGBT Rectifier

TECHNICAL SPECIFICATIONS

MODELS	310	315	320	330	340	360	380	3100	3120	3160	3200	3250	3300	3400	3500
Power (kVA)	10	15	20	30	40	60	80	100	120	160	200	250	300	400	500
INPUT															
Input Voltage	3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)														
Input Voltage Range	+10%, -15%														
Input Frequency	50 Hz or 60 Hz														
OUTPUT															
Power (kW)	8	12	16	24	32	48	64	80	96	128	160	200	240	320	400
Power Factor	0.8														
Output Voltage	3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)														
Voltage Stability	(Balanced load: ± %1) (Unbalanced load: ± %2.5) (Step load: ± %5)														
Correction Time	After step load: Max 25 ms.														
Frequency	50 Hz or 60Hz														
Frequency Tolerance	Adjustable + % 2 (synchronous) , +%0.2 (free operation)														
Efficiency of %100 Load	87 - 91%							90 - 92%				92 - 94%			
Total Harmonic Distortion	<%3 (for linear loads), <%7 (for non-linear loads)														
Crest Factor	3:1														
Overload Protection	(100% 125% load: 10min.) (125% 150% load: 1min.) (>150% load: by-pass)														
Short Circuit Protection	Short circuit protection electronically														
BATTERY															
Type	Maintenance free lead-acid														
Battery Number	10 or 20 or 30 or 32								30 or 32 or 44						
Charge Voltage (Vdc)	135 / 270 / 405 / 432								405 / 432 / 540						
Discharge Voltage (Vdc)	102 / 204 / 300 / 320								300 / 320 /480						
Ambient Temperature	25 °C														
Battery Test	Automatic or manual														
GENERAL															
Series Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)														
Software	Management software														
Operating Temperature Interval	0°C - 40°C														
Cooling	Forced cooling														
Relative Humidity	>90% condensing														
Operating Height	<1000m from sea level														
Acoustic Noise	<56dBA				<60dBA			<65dBA			<70dBA				
Protection Class	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)														
APPLICATION STANDARDS															
EMC, Safety	IEC62040-1, IEC62040-2														
Quality Assurance	ISO14001 - ISO9001, CE														
OPTIONS															
Input Transformer	Isolation transformer at input.														
Input Harmonic Distortion THD	%5 (12 pulse rectifier and filter)														
Input Power Factor	0.90 (With additional filter or 12 pulse rectifier and filter)														
MBS	Full isolation with maintenance by-pass														
Operating In Parallel	1+3 system (Standby, Current sharing, Parallel Redundant)														

NOTE: All specifications are subject to change without notice. Consult Germarel Technical Support Department for special applications.
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Germarel Integrated Solutions

Rectifier (REC#1)

Rectifier (REC#2)

Inverter (INV#1)

Inverter (INV#2)

STS

Battery

Parallel Redundant UPS

Battery Charger

Parallel Redundant UPS Inverter

GENERAL SPESIFICAITIONS

- These systems are produced in variety of options. For example; parallel working rectifiers, inverters, STS and battery group mounted in the same cabin.
- SMPS, Hi-rect and rectifier systems which include the battery group.
- Parallelly working rectifiers with battery group.
- Parallelly working inverters, rectifiers and static by-pass systems with battery working.
- Systems which has Battery group, rectifiers, inverters and distribution fuses.

Operation Areas

- Airports
- Energy distribution systems
- Telecommunication systems
- Oil production platforms
- Gas distribution stations

Production Range

- According to the customer reguirement

FC-GER Series

GENERAL SPECIFICATIONS

- 3 Phase full sinus output wave-form.
- 50 to 400 Hz output frequency.
- Internal isolation transformer at output.
- Ability to drive non-lineer loads.
- Reliable IPM (Intelligent Power Module) techology IGBT.
- DSP (Digital Signal Processor) control.
- Space Vector Control technology.
- 2x16 / 4x20 Character LCD display for monitoring all adjustments
- Audible alarm.
- Programmable dry contact outputs and Modbus communication
- Adjustable switching frequency.
- Advanced pc program for PC connection.
- Ability to set up / adjust all operational parameters through front panel and PC commuication.
- Input, Output over voltage, over current, short circuit, over temperature protections.
- Ability to control via external digital input or communication.
- Programmable automatic restart.
- Ability to cold start and battery operation.

TECHNICAL SPECIFICATIONS

INPUT	
Voltage (V)	3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)
Frequency (Hz)	50Hz / 60Hz Automatic Selectable ± 10 %
Frequency Range	± 10%
Rectifier Topology	6 pulse,12 pulse Thyristor or IGBT
OUTPUT	
Power (kVA)	10 - 400kVA
Power (kW)	8kW - 320kW
Voltage (V)	Single Phase Output 110VAC / 127VAC / 208VAC / 220VAC / 230VAC / 240VAC Three Phase Output 3*190VAC / 3*220VAC / 3*360VAC / 3*380VAC / 3*400VAC / 3*415VAC (Phase to Phase)
Frequency (Hz)	50Hz / 60Hz / 83 1/3Hz / 400Hz ± 1%
Power Factor	0.8
Crest Factor	3 : 1
Total Harmonic Distortion	< 3 % with lineer load
Efficieny	> 88 - 93%
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)
ALARMS AND DISPLAYS	
Measurements	Output Voltage (3 Phase) / Output Current (3 Phase) / DC Bus Voltage / DC Bus Current
Protections & Alarm Warning messages	Output Low / High
	DC Bus Low / High / Too Low
	Overload / Overcurrent
	Over Temperature
	Short Circuit / IGBT Overcurrent
	Memory / DSP Error
Led Indicators	Input OK
	Operation
	Common Alarm
SYSTEM PROPERTIES	
System Design Life	20 years
Protection Class	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)
Storage Temperature	(-20°C) to (+70°C)
Operating Temperature	(-10°C) to (+50°C)
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)
Altitude	1000m (-1% Power for every 100m after 1000m) Max. 4000m
Relative Humidity	0 - 95% (Non-condensing)
Noise (1m away)	<55db (Single Phase), <65dB (Three Phase)
Color	RAL7035, RAL7032 (Standard), others (Optional)
Cable Entry	Front Bottom (Top entry optional)
STANDARDS	
Standards	IEC62040-1, IEC62040-2, ISO 9001, ISO 14001, CE Decleration

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Static Voltage Stabilizer

ST-GER

GENERAL SPECIFICATIONS

- Single Phase, 3kVA - 50kVA
- Three Phase, 10kVA - 2000kVA
- DSP (Digital Signal Processor, 16-bit) with intelligent control and high reliability
- Normal and wide bandwidth
- Static (thyristor) switching due to the quick response and regulation time (500V/s)
- Up to 25 levels of voltage regulation
- Network / Regulator selection switch
- Static and manual bypass
- High efficiency
- Optional built-in output isolation transformer
- Measurement, 2x16 character LCD display that can show their status and alarm messages
- Electronic and electromechanical protections thermal-magnetic protection and extinguishing input voltage (which suppresses sudden voltage pulse)
- Output safety contactors
- LED indicators can easily monitor the status of the regulator Audible alarm.
- Ability to program all study variables (password protected)
- The possibility to calibrate the measurements from the front panel
- Language selection from the front panel (English, German, Turkish, Dutch, Portuguese, Spanish, Arabic)
- Automatic self-test mode
- Up to 200 dates and times for event recording
- Permanent 1 general alarm for relay contact output
- Easy maintenance
- Making the network performance analysis
- Programmable alarm relay output
- RS232 ability to monitor Modbus communications,
- 10-year spare parts guarantee and extensive service support

OPTIONS

- Programmable alarm relay output (up to 16).
- SNMP and RS485
- Input / Output Voltage / Current Transducers. (4-20mA and 0-10V simultaneously)
- Easy monitoring with Analog meters
- Touch graphic LCD display (Russian and Arabic support)
- Interior cabinet light, cabinet heater, dust filter etc.
- Internal input and output isolation transformer

USAGE AREAS

- CNC Laser Machine
- Uninterruptible Power Supplies
- Medical Devices
- Telecommunications Equipment
- Automation Equipment
- Woodworking Machinery
- Injection Molding Machines
- TV Transmitters
- Textile Machinery
- Design and construction Machinery
- Marine Equipment
- Photo Printers
- Lifts
- Access Control Systems
- Dental Equipment
- Burglar Alarm Systems
- Jewelry Devices
- Technical Devices
- Air-conditioning systems
- Motorized Shutters
- Computer Systems
- Lighting Units
- Boilers
- Packaging Machinery
- Heating and Cooling Systems
- Fire Safety Systems
- Personnel Attendance Control System
- Electrical Appliances
- Motor Machinery
- Telephone Exchange
- Radio Transmitters
- Laser Devices

ST-GER

TECHNICAL SPECIFICATIONS		
PHASE	**SINGLE PHASE**	**THREE PHASE**
Power (kVA)	1kVA - 200kVA	10kVA - 2000kVA
INPUT		
Input Voltage	220/230/240 VAC Single Phase + Neutral	3*380/3*400/3*415 VAC Three Phase + Neutral
Input Voltage Tolerance	176 VAC - 276 VAC (154 - 276 VAC Optional)	3*300 VAC - 3*475 VAC (265 - 475 VAC Optional)
Input Frequency	50 - 60 Hz ± 5%	
OUTPUT		
Output Voltage	220/230/240 VAC Single Phase + Neutral	*380/3*400/3*415 VAC Three Phase + Neutral
Output Voltage Tolerance	±3% (±2% Optional)	
Over Load	115% @ load 10mins; 125% @ load 1mins; 150% @ load 10 Sec; >150% @ load Output Off	
Output Frequency	50-60 Hz. ± % 5	
Regulation Speed	~ 500 V/s	
Power Factor	0.8	
Effiency	0,92%	0,94%
Output Connection	Suitable terminal with 4x16 Character LCD Display	
Measurements	İnput Power; Input Voltage; Output Voltage; Output Load; Output Frequency	
Alarms	Overload; Over Temperature; Input Fault; Output Fault etc.	
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)	
PROTECTION		
Output Voltage Protection	When output voltage out of adjusted tolerance values, Output off with contactor	
Current Protection	Thermic Magnetic Breakers	
Maintenance	Maintenance Bypass Line (15kVA and above)	
OPTIONS		
Phase Protection	In any phase failure turns off the device	
RFI / Harmonic Filter	Protects from input surges and drops	
Harmonic Filter	RFI / HARMONIC filter decreases high frequency noise and harmonic	
Isolation Transformer	Input and output Isolation Transformer for special usage	
SYSTEM PROPERTIES		
System Design Life	20 years	
Protection Class	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)	
Storage Temperature	(-20°C) to (+70°C)	
Operating Temperature	(-10°C) to (+50°C)	
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)	
Altitude	1000m (-1% Power for every 100m after 1000m) Max. 4000m	
Relative Humidity	0 - 95% (Non-condensing)	
Noise (1m away)	<45 - 55 dB (depends on capacity)	<45 - 65 dB (depends on capacity)
Color	RAL7035, RAL7032 (Standard), others (Optional)	
Cable Entry	Front Bottom (Top entry optional)	
STANDARDS		
Standards	ISO9001, ISO14001	

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Automatic Voltage Stabilizer

SR-GER

AREAS OF OPERATION

Hospitals, Buildings and Constructions, Manufacturing Companies, Offices and supply of devices in need of stabilized voltage.

GENERAL SPECIFICATIONS

- High efficiency, High reliability
- Modular construction for easy customization
- Continuous voltage regulation and uninterrupted transfer.
- Separate management of each phase.
- Voltage regulation on Network fluctuations and unbalanced loads
- Monitoring and managing of output current and settings.
- External maintenance by-pass
- Short circuit and over load protection
- Ability to work with non-linear loads
- Easy, front panel Access for Service / Installation
- Noise Attenuation
- Guarantee of 20 years spare parts availability.
- Reliable technical support

OPTIONS

- Wide input voltage range
- Advanced LCD panel providing detailed information
- Microprocessor controlled
- Optional RS232 Communication for remote monitoring and control

TECHNICAL SPECIFICATIONS

MODELS	SINGLE PHASE	THREE PHASE
Power (kVA)	2 to 30kVA	6 to 1500kVA
INPUT		
Input Voltage	220VAC - 230VAC - 240VAC Single Phase + Neutral	3*380VAC - 3*400VAC - 3*415 Three Phase + Neutral
Input Voltage Tolerance	160VAC - 245VAC	3*277VAC - 3*424VAC
Input Frequency	30 - 70 Hz	
OUTPUT		
Output Voltage	220VAC - 230VAC - 240VAC	3*380VAC - 3*400VAC - 3*415
Output Voltage Tolerance	2% and 1%(Optional)	
Over Load	110% @ load 10mins; 125% @ load 1mins; 150% @ load 10 Sec; >150% @ load 1 sec. then Output Off	
Output Frequency	50Hz - 60Hz ± 10%	
Regulation Speed	80 V/s	
Power Factor	0.8	
Effiency	%95 - %96	%95 - %97
LCD Display	Input Voltage, Output Voltage, Output Load, Output Frequency and Failure Infos (Overload, Over Temperature etc.)	
Communication	RS232(Standard), Dry Contacts (Standard), RS485(Optional), TCP(Optional), SNMP(Optional), GSM(Optional)	
PROTECTION		
Output Voltage Protection	When output voltage out of adjusted tolerance values, Output off with contactor	
Current Protection	Thermic Magnetic Breakers	
Maintenance	Maintenance Bypass Line (15kVA and above)	
OPTIONS		
Phase Protection	In any phase failure turns off the device	
RFI / Harmonic Filter	Protects from input surges and drops	
Harmonic Filter	RFI / HARMONIC filter decreases high frequency noise and harmonic	
GENERAL		
Protection Class	IP20(Standard) to IP54(Optional), (consult to Germarel for IP54 to IP65)	
Storage Temperature	(-10°C) to (+60°C)	
Operating Temperature	(-0°C) to (+50°C)	
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)	
Altitude	1000m (-1% Power for every 100m after 1000m) Max. 4000m	
Relative Humidity	0 - 90% (Non-condensing)	
Noise (1m away)	<45 - 50 dB (depends on capacity)	<45 - 65 dB (depends on capacity)
Color	RAL7035, RAL7032 (Standard), others (Optional)	
Cable Entry	Front Bottom (Top entry optional)	
STANDARDS		
Standards	ISO9001, ISO14001, CE Decleration	

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Rectifier / Uninterruptible, DC Energy

DC-GER

GENERAL SPECIFICATIONS

- Ergonomic design for easy mounting
- Dry-type maintenance-free battery
- Constant voltage charging and Working Principle
- Microprocessor control with controlled battery test button
- Wide input voltage tolerance UPS, DC Power
- Isolation between Input & Output

Technical Specifications

MODELS	BR12	BR24	BR48	BR110	BR125
INPUT			**SINGLE PHASE**		
Input Voltage Range	90-265 VAC	90-265 VAC	90-265 VAC	176-265 VAC	176-265 VAC
Input Frequency	50-60 Hz				
Input Protection	Fuse Protected				
Power Factor	0.9				
OUTPUT					
Output Voltage	12VDC	24VDC	48VDC	110VDC	125VDC
Rated Output Current					
Maximum Output Current	300% Inominal				
Output Efficiency	>87%				
Output Protection	Electronic short-circuit protection and Fuses				
Cooling	Fan Forced(Standard), Natural Cooling(Optional)				
GENERAL SPECIFICATIONS					
Operating Temperature	0- 50°C				
Relative humidity	Up to 95%				
Input / Output Connections	Connector				
Cabinet Protection Class	IP20(Standard) to IP54(Optional)				
STANDARDS					
EMC	EN61204-3				
Safety	EN60335-1				

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Rectifier / Battery Charger

CH-GER

OPTIONS

- Active parallel (current sharing) operation up to 4 devices.
- Ability to monitor batteries and battery low alarm, even when the AC input fails.
- Easy observation via analog gauges (input / output / battery voltages / currents).
- Earth leakage monitoring
- Battery temperature compensation
- Battery test with adjustable voltage and duration
- Transducers for input / output voltage(s) / current(s) (4-20mA and 0-10V)
- RS485 and SNMP communication

GENERAL SPECIFICATIONS

- Single phase or Three phase input (model dependent)
- 24VDC / 48VDC / 110VDC / 220VDC output option
- Smart control and high reliability with DSP (Digital Signal Processor)
- Float charge, equalizing charge and boost charge modes
- Automatic and manual charge modes
- Low output voltage ripple
- 2x16 character LCD display, showing measurements, status and alarm messages
- Soft start
- Led displays for easy observation of Rectifier status. Audible alarm.
- Programmable current limitation
- Operation as voltage source or current source
- Calibration of measurements from front panel
- Language selection from front panel (English / German / Turkish / Dutch / Portuguse)
- DC Low / High, Line Failure, Over Temperature, Short Circuit protections
- Ability to program all operation parameters (password protected)
- Programable alarm relay contact outputs
- Possibility of monitor and control over RS232-RS485.
- Log records with date and time stamp up the 200 events.
- 10 years of spare parts supply warranty
- 19" or 21" options with ability to wall mount and rack.

TECHNICAL SPECIFICATIONS

INPUT	SINGLE PHASE	THREE PHASE
Voltage	220VAC / 230VAC / 240VAC	3*380VAC / 3*400VAC / 3*415VAC
Voltage Tolerance	± 15%	
Frequency	50 - 60 Hz.	
Frequency Tolerance	±10%	
OUTPUT		
Voltage	24VDC / 48VDC / 110VDC / 220VDC	
Current	100 to 12100W	
Current Limiting	0 - 102% (Adjustable)	
Ripple	<0,5%	
Voltage Regulation	±0.5 % at float charge, ±1% at boost charge	
Efficiency	>85%	>92%
Protections	Thermic Magnetic Breaker (Input/Output) Short circuit, Over voltage/current protection, Automatic restart	
Endurable Dielectric Voltage	2000 V Input-Output 2000 V Input-Chasis 500 V Output - Chasis (For PS with output voltage <50 V) 1000 V Output - Chasis (For PS with output voltage >50 V)	
BATTERY		
Battery Charge Voltage	Automatic charge, boost charge: 2,4 V / Cell Float Charge: 2.25 V / Cell	
Boost Charge Time	0 to 99 hours (adjustable)	
Displays	Automatic charge, Float charge, Boost charge, Common alarm	
Alarms	Common relay contact output for AC input low, DC output low and overheat	
GENERAL FETURES		
Protection Class	IP20(Standard) to IP54(Optional)	
Storage Temperature	(-10°C) to (+60°C)	
Operating Temperature	(-0°C) to (+50°C)	
Cooling	Fan Forced Cooling(Standard), Natural Cooling(Optional)	
Altitude	1000m (-1% Power for every 100m after 1000m) Max. 4000m	
Relative Humidity	0 - 95% (Non-condensing)	
Noise (1m away)	<45 - 50 dB (depends on capacity)	<50 - 55 dB (depends on capacity)
Color	RAL7035, RAL7032 (Standard), others (Optional)	
Cable Entry	Front Bottom (Top entry optional)	
Battery Charge Characteristics	VDE, DIN 41773	
Dimensions (1U=44,45mm)	19", 21" or Wall Mount Cabinet, 5U	
STANDARDS		
Standards	ANSI-NEMA PE 5; IEC62040-1; IEC62040-2; ISO9001; ISO14001	

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UPS-GER

GENERAL SPECIFICATIONS

- Automatic booting when the utility recovers
- Wide range of input voltage
- Alarm and mute
- Auto recharging
- Over-voltage and circuit short protection
- Interface of RJ45/11 and USB

TECHNICAL SPECIFICATIONS

MODEL	HS500	HS600	HS800	HS1000	HS1200	HS1500	HS2000	HS3000
Capacity	500VA	600VA	800VA	1000VA	1200VA	1500VA	2000VA	3000VA
Input voltage	110/120 VAC or 220/230/240 VAC						220 VAC	
Input voltage range	85-150 VAC /145-290 VAC						175-275 VAC	
Input frequency	50-60Hz (Auto sensing)						50Hz	
Output voltage	110/120 VAC or 220/230/240 VAC						220 VAC	
Output voltage range	102-132 VAC or 200-255 VAC						200-240 VAC	
Output frequency	50/60Hz ± 0,5Hz						50Hz ± 0,5Hz	
Wave form	Pure Sine Wave							
Transfer time	Typical 2-6, max≤10ms						≤10ms	
QTY & capacity of battery	1 pc*12V4.5 Ah	1 pc*12V7Ah	1 pcs*12V9Ah	2 pcs*12V7Ah	2 pcs*12V7,5Ah	2 pc*12V9Ah	4 pc*12V7Ah	4 pc*12V9Ah
Charging period	4-6H to 90% capacity						10~16 hours	
Protection	Low voltage, overload and short circuit protection							
Operation Temperature	0-40°C							
Humidity	20% - 90% (Non-condensing)							
Noise	≤ 40dB							
Net Weight (kg)	5,5	4	6	10,2	10,6		19	21
Dimensions	250*95*140	305*85*140		335*118*190	340*110*265		408*145*220	
Optional	LED/LCD, RJ45/11 & USB							

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Tower Online 1/1 Phase UPS

UPS-GER

1-3 KVA (220V/230V/240V)
0.8-2 KVA (110V/120V/127V)

GENERAL SPECIFICATIONS

UPS-GER series UPS is an online double-conversion UPS with full DSP control technology. With high input and output power factor, self-adjusting output frequency, smart battery management system and network management, SLI11 is a perfect choice for computers, telecommunication equipments and other sensitive devices.

APPLICATION

- IDC (Internet Data Center)
- Networks and Servers
- Control and Communication Systems
- Offices (Computer etc.)

TECHNICAL SPECIFICATIONS (220/230/240V)

MODEL		SLI1101S	SLI1101L	SLI1102S	SLI1102L	SLI1103S	SLI1103L
Capacity		1kVA / 900W		2kVA / 1,8kW		3kVA / 2,7kW	
Phase		Single Phase in, Single Phase out					
Input Voltage Range		110VAC - 288VAC					
		100% load@ > 176VAC; 80% load@ > 154 VAC 70% load@ > 132VAC; 50% load@ > 110 VAC					
Input PF		≥0.97					
Input Frequency		40 Hz ~ 70 Hz					
Output PF		0.9					
Output Voltage		220V / 230V / 240V					
Voltage Regulation		± 1 %					
THDu		≤2% THD, Linear Load ≤ 5.5% THD, Non-Linear		≤2% THD, Linear Load ≤ 5% THD, Non-Linear			
Battery	Model	12VDC / 7Ah	External	12VDC / 7Ah	External	12VDC / 7Ah	External
	Quantity	3	3	6	6	8	8
	Max-Charging Current	1A	5A	1A	5A	1A	5A
	Voltage	36VDC		72VDC		96VDC	
Efficiency		87%		91%		90%	
Noise (1 meter away)		<43dB@<70% Load <47dB@>70% Load		<45dB@<70% Load, <50dB@>70% Load			
Overload Capability (Inverter mode)		105%~130%:to bypass after 1 min; 150%: to bypass after 30sec					
Overload Capability (Battery mode)		105%~130%:shutdown after 10Sec; 150%: shutdown after 5sec					
Crest Ratio		3:1					
Display		LED+LCD					
Options		Surge Protection					
Interface		Standard: RS232 Optional: SNMP, USB, Dry Contacts, Parallel Kit, ECO Kit, Surge Protection					
W*D*H (mm)		145*353*222		190*374*336		190*426*336	
Package Weight (kg)		10	6	17	11	22	12

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Tower Online 1/1 Phase UPS

UPS-GER

6-20kVA (220V/230V/240V)
4-12KVA (110V/120V/127V)

GENERAL SPECIFICATIONS

UPS-GER series UPS is an online double-conversion UPS with full DSP control technology. With high input and output power factor, self adjusting output frequency, smart battery management system and network management, SLI-SLIX is a perfect choice for computers, telecommunication equipments and other sensitive devices.

APPLICATION

- IDC (Internet Data Center)
- Networks and Servers
- Workstations and Communication Systems
- Offices (Computer etc.)

TECHNICAL SPECIFICATIONS (220/230/240V)

MODEL		SLI1106XS	SLI1106XL	SLI1110XS	SLI1110XL	SLI1115L	SLI1120L
Capacity		6kVA / 6kW		10kVA / 10kW		15kVA / 13,5kW	20kVA / 18kW
Phase		Single Phase in, Single Phase out					
Input Voltage Range		110VAC - 288VAC					
		100% load @ >176VAC; 90% load @ >160VAC 80% load @ >140VAC; 60% load @ >110VAC					
Input PF		≥0.99				≥0.98	
Input Frequency		40 Hz ~70 Hz					
Output PF		1				0.9	
Output Voltage		220V / 230V / 240V					
Voltage Regulation		± 1 %					
THDu		≤2%THD, full linear load; ≤5%THD, non-linear load				1%THD, full linear load 5%THD, non-linear load	
Battery	Model	12VDC / 7Ah	External	12VDC / 9Ah	External	External	External
	Quantity	16 to 20 pcs.	16 to 24 pcs.	16 to 20 pcs.	16 to 24 pcs.	16	
	Max-Charging Current	1A	5A	1A	5A	5A	5A
	Voltage	192 default (Adjustable)				192VDC	
Efficiency		Normal Mode: max 95%; Battery Mode: max 93%				Normal Mode: max 93,5%; Battery Mode: max 92%	
Noise (1 meter away)		<52dB @ <60% Load <56dB @ >60% Load		<56dB@ <60% Load; <58dB@ >60% Load		<48dB@ <70% Load; <60dB@ >70% Load	
Overload Capability (Inverter mode)		110%: for 10 min ; 125%:for 1min ; 150%:for 30 sec (shut down the bypass after 1 min)					
Overload Capability (Battery mode)		110%: Shutdown after 1mins; 130%: Shutdown after 10s; >130%: Shutdown after 200ms					
Crest Ratio		3:1					
Display		LED+LCD					
Options		Surge Protection, Manual Bypass					
Interface		Standard: RS232 Optional: SNMP, USB,Dry Contacts, Parallel Kit, ECO Kit					
W*D*H (mm)		190*510*705	190*510*340	190*580*705	190*580*340	250*562*650	250*562*710
Package Weight (kg)		66	15	75	17	27	34

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Tower Online 3/1 Phase UPS

UPS-GER

6-20kVA (220V/230V/240V)
4-12KVA (110V/120V/127V)

GENERAL SPECIFICATIONS

UPS-GER series UPS is an online double-conversion UPS with full DSP controlled technology. With high input and output power factor, self-adjusting output frequency and network management SLI31 is perfect choice for computers, telecommunication equipment and other sensitive devices.

APPLICATION

- IDC (Internet Data Center)
- Networks and Servers
- Workstations and Communication Systems
- Offices (Computer etc.)

TECHNICAL SPECIFICATIONS (220/230/240V)

MODEL		SLI3110S	SLI3110L	SLI3115L	SLI3120L	SLI3140L
Capacity		10kVA / 9kW		15kVA / 13,5kW	20kVA / 18kW	40kVA / 36kW
Phase		Three Phase in, Single Phase out				
Input Voltage Range		110VAC - 288VAC				
		100% load @ >176VAC; 90% load @ >160VAC 80% load @ >140VAC; 60% load @ >110VAC				
Input PF		0.95				0.99
Input Frequency		40 Hz ~70 Hz				
Output PF		0.9				
Output Voltage		220V / 230V / 240V				
Voltage Regulation		± 1,5%				
THDu		1%THD, full linear load; 5%THD, non-linear load				
Battery	Model	12VDC / 9Ah	External	External	External	External
	Quantity	16 pcs.	16 pcs.	16 pcs	16 pcs	16 pcs
	Max-Charging Current	1A	5A	5A	5A	5A
	Voltage	192VDC				
Efficiency		Normal Mode: max 93,5%; Battery Mode: max 92%				Normal Mode: 95%; Battery Mode: 95%
Noise (1 meter away)		<53dB @ <70% Load <66dB @ >70% Load				<65dB @ 100% Load; <62dB @ 45% Load
Overload Capability (Inverter mode)		110%: for 10 min ; 125%:for 1min ; 150%:for 30 sec (shut down the bypass after 1 min)				
Overload Capability (Battery mode)		110%: Shutdown after 1mins; 130%: Shutdown after 10s; >130%: Shutdown after 200ms				
Crest Ratio		3:1				
Display		LED+LCD				
Options		Surge Protection, Manual Bypass				
Interface		Standard: RS232, EPO Optional: SNMP, USB,Dry Contacts, Parallel Kit, ECO Kit				
W*D*H (mm)		250*562*770	250*562*650	250*562*650	250*562*710	600*980*950
Package Weight (kg)		60	25	27	34	170

NOTE: All specifications are subject to change without notice. Consult Germarel Technical Support Department for special applications.
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Rack Online UPS

UPS-GER

1-10 KVA (220V/230V/240V)
0.8-6 KVA (110V/120V/127V)

GENERAL SPECIFICATIONS

UPS-GER series Rack UPS is an online double-conversion UPS with full DSP control technology. With 19 inch standard rack design, self adjusting output frequency, smart battery management system and network management, SLR11 series Rack is a perfect choice for computers, IT equipments and other sensitive devices.

APPLICATION

- IDC (Internet Data Center)
- Networks and Servers
- Workstations and Communication Systems
- Offices (Computer etc.)

TECHNICAL SPECIFICATIONS (220/230/240V)

MODEL		SLR1101S	SLR1101L	SLR1102S	SLR1102L	SLR1103S	SLR1103L
Capacity		1kVA / 900W		2kVA / 1,8kW		3kVA / 2,7kW	
Phase		Single Phase in, Single Phase out					
Input Voltage Range		110VAC - 288VAC					
		100% load@ > 176VAC; 80% load@ > 154 VAC 70% load@ > 132VAC; 50% load@ > 110 VAC					
Input PF		≥0.97					
Input Frequency		40 Hz ~ 70 Hz					
Output PF		0.9					
Output Voltage		220V / 230V / 240V					
Voltage Regulation		± 1 %					
THDu		≤2% THD, Linear Load ≤ 5.5% THD, Non-Linear		≤2% THD, Linear Load ≤ 5% THD, Non-Linear			
Battery	Model	12VDC / 7Ah	External	12VDC / 7Ah	External	12VDC / 7Ah	External
	Quantity	3	3	6	6	8	8
	Max-Charging Current	1A	5A	1A	5A	1A	5A
	Voltage	36VDC		72VDC		96VDC	
Efficiency		87%		91%		90%	
Noise (1 meter away)		<43dB@<70% Load <47dB@>70% Load		<45dB@<70% Load, <50dB@>70% Load			
Overload Capability (Inverter mode)		105%~130%:to bypass after 1 min; 150%: to bypass after 30sec					
Overload Capability (Battery mode)		105%~130%:shutdown after 10Sec; 150%: shutdown after 5sec					
Crest Ratio		3:1					
Display		LED+LCD					
Options		Surge Protection, Rail Kit, Foot Brackets					
Interface		Standard: RS232 Optional: SNMP, USB, Dry Contacts, Parallel Kit, ECO Kit					
W*D*H (mm)		145*353*222		190*374*336		190*426*336	
Package Weight (kg)		11,5	7	25	8	31	9,5

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Rack Online UPS

UPS-GER

6-10 KVA (220V/230V/240V)
4-6 KVA (110V/120V/127V)

GENERAL SPECIFICATIONS

UPS-GER Series UPS, ranging from 6kVA to 10kVA, is a double conversion online rack UPS with full DSP control technology. It applies the advanced 3-level technology, achieving an efficiancy rate up to 95%. With its compact design of high power density (kVA = kW) in 2U height, SLRX series make an ideal choice for computers, telecommunication equipment and other sensitive devices

APPLICATION

- IDC (Internet Data Center)
- Networks and Servers
- Workstations and Communication Systems
- Offices (Computer etc.)

TECHNICAL SPECIFICATIONS (220/230/240V)

MODEL		SLR1106XS	SLR1106XL	SLR1110XS	SLR1110XL
Capacity		6kVA / 6kW		10kVA / 10kW	
Phase		Single Phase in, Single Phase out			
Input Voltage Range		110VAC - 288VAC			
		100% load @ >176VAC; 90% load @ >160VAC 80% load @ >140VAC; 60% load @ >110VAC			
Input PF		≥0.99			
Input Frequency		40 Hz ~70 Hz			
Output PF		1			
Output Voltage		220V / 230V / 240V			
Voltage Regulation		± 1 %			
THDu		≤2%THD, full linear load; ≤5%THD, non-linear load			
Battery	Model	12VDC / 7Ah	External	12VDC / 9Ah	External
	Quantity	16 to 20 pcs.	16 to 24 pcs.	16 to 20 pcs.	16 to 24 pcs.
	Max-Charging Current	1A	5A	1A	5A
	Voltage	192 default (Adjustable)			
Efficiency		Normal Mode: max 95%; Battery Mode: max 93%			
Noise (1 meter away)		<52dB @ <60% Load <56dB @ >60% Load		<56dB@ <60% Load; <58dB@ >60% Load	
Overload Capability (Inverter mode)		110%: for 10 min ; 125%:for 1min ; 150%:for 30 sec (shut down the bypass after 1 min)			
Overload Capability (Battery mode)		110%: Shutdown after 1mins; 130%: Shutdown after 10s; >130%: Shutdown after 200ms			
Crest Ratio		3:1			
Display		LED+LCD			
Options		Surge Protection, Manual Bypass, Rail Kit, Foot Brackets			
Interface		Standard: RS232 Optional: SNMP, USB,Dry Contacts, Parallel Kit, ECO Kit			
W*D*H (mm)		438*660*172	438*550*86	438*660*172	438*550*86
Package Weight (kg)		59	17,5	67	20,5

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Rack Online UPS

UPS-GER

GENERAL SPECIFICATIONS

UPS-GER series is an online double-conversion UPS with full DSP control technology. With 19 inch standard rack design, flexible configuration of 3/3, 3/1 and 1/1 and compact design it is the ideal choice for modern data centers.

APPLICATION

- IDC (Internet Data Center)
- Networks and Servers
- Workstations and Communication Systems
- Offices (Computer etc.)

TECHNICAL SPECIFICATIONS (220/230/240V)		
MODEL	**SLR3320**	**SLR3325**
Capacity	20kVA/20kW	25kVA/25kW
Phase	3P+N+PE (3/1 and 1/1 Optional)	
Input Voltage Rate	380VAC / 400VAC / 415VAC (Phase-Phase)	
Input Voltage Range	304VAC-478VAC (Phase-Phase), full load; 228VAC-304VAC (Phase-Phase) derate from 75% to 100% load	
Input PF	≥0.99	
Input THDi	<3% (100% Linear load)	
Input Frequency	50 / 60 Hz	
Input Frequency Range	40 - 70 Hz	
Bypass Voltage	380VAC / 400VAC / 415VAC (Phase-Phase), -40% ~ +25% (Adjustable)	
Bypass Frequency	50 / 60Hz, ±1Hz, ±3Hz, ±5Hz (Adjustable)	
Bypass Overload	Long time @ 110% load; 5 mins @ 125% load; 1 min @ >150% load	
Output Voltage	380VAC / 400VAC / 415VAC (Phase-Phase) ±1%	
Output Frequency	50 / 60 Hz	
Output PF	1	
Output THDu	<1% Linear Load; <6% Non-Linear Load (IEC/EN62040-3)	
Inverter Overload	1 hour @ 110% load; 10mins @ 125% load; 1 min @ 150% load, 200ms @ >150% load	
Battery Number	±240VDC (±20 batteries)(40 in total)	
Charging Accuracy	1%	
Charging Capacity	Up to 20% of Output Power	
Battery Cold Start	Yes	
Efficiency	>96% @ AC Mode, >95,5% @ Battery Mode	
Display	LED + LCD + Touch Screen	
Interface	RS232, RS485, Programmable Dry Contact	
Options	SNMP Card, Parallel Operation, Surge Protection	
Storage Temperature	between -40 and 70°C	
Operating Temperature	between 0 and 40°C	
Relatibe Humidity	0 – 95% Non-Condensing	
Noise (1 meter)	65dB @ 100% load, 62dB @ 45% load	
W*D*H (mm)	485*885*130mm	
Package Weight (kg)	25	

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UPS-GER

- 2 RS232 serial ports and 12 dry contact outputs
- 3 DSP controlled modular structure
- Optional SNMP and MODBUS adaptors
- Optional graphical and touch panel
- 2 years warranty
- 10 years spare parts support
- Manufactured according to EC Drictive; EN62040
- Full digital structure
- Small footprint
- Eco-Mode operation
- Fewer electronic components
- Output current limiting
- Advanced diagnostics for the input
- Selectable input/output Voltage / Frequency range
- Split by-pass input (second input)
- Output DC leakage protection
- Seperate DSP for inverter control
- Seperate DSP for the PFC
- 3 level battery protection
- High charge current capacity
- Charge / discharge current indicator
- Advanced remote control features

DESCRIPTION

The new UPS-GER uses the latest DSP technology to be programmed to suit a wide variety of electrical environments without impending its performance. With the PLT Power range, efficiency, reliability and functionality are enhanced to levels unattainable by the old analogue technology. This technology does not only create significant increase in MTBF, the capability of DSP to accurately manipulate signals at very high speed permits all the UPS subsystems to be controlled with greatly increased precision.

GENERAL SPECIFICATIONS

- Transformerless UPS topology
- Low input current total harmonic distortion (THD)
- High input power factor
- High efficiency up to 94%
- Cold Start function
- Static and maintenance by-pass switch
- Output short circuit and overload protection
- External REPO switch input
- 192 events memory 192 events 4500 alarms)
- Clock and calendar (battery supported)
- Automatic battery test, remaining battery time indicator
- Temperature compansated charge system
- Regenerative backfeed function

UPS-GER Series

10-120 kVA Three Phase

TECHNICAL SPECIFICATIONS									
	PLT 310	**PLT 315**	**PLT 320**	**PLT 330**	**PLT 340**	**PLT 360**	**PLT 380**	**PLT 3100**	**PLT 3120**
Power kVA	10	15	20	30	40	60	80	100	120
INPUT									
Voltage	380 - 400 VAC 3 Phase + N + E ± 20% (240 / 415VAC + 15%, -25%)								
Frequency	50 Hz / 60Hz selectable ± %5								
Power Factor	> 0.99								
Harmonic Current Distortion (THDI)	< 4 %								
By-pass Voltage	380 - 400 VAC 3 Phase , 4 Wires ± 20%								
Voltage Distortion	< 10%								
Protection	Fuses, Voltage & Frequency tolerance, Input power limit, Phase sequency indicator, Input PFC								
OUTPUT									
Power (kW)	9	13,5	18	27	36	54	72	90	108
Power Factor	0.9 (Standard), 1.0 (Optional)								
Voltage	380-400 Vac 3 phase + N + E ± 1%								
Frequency	50 Hz / 60Hz selectable								
Frequency tolerance	Line synchronized: ± 2 % / Free running: ± 0,2% (adjustable)								
Efficiency	up to 94%								
Crest Factor	3:1								
Overload protection	100% - 125 % load: 10 min., 125% - 150 % load: 1 min., - > 150% load: by pass (adjustable)								
Other protection	Advanced short circuit, Voltage tolerance, DC balance, Regenerative load, Current limiting								
THD (at 100% linear load)	<3%								
BATTERY									
Type	VRLA AGM / GEL (Standard), NI-Cd (Optional)								
Number of Battery	2x30 (±30): 60 batteries								
Float Charging Voltage	2 x 405 VDC								
End of Discharge Voltage	2 x 300 VDC								
Charge Current	10% of the total Output Power @ full load								
Battery Cabinet	Internal							External	
Battery ambient temp.	25 °C								
Protections	3 level alarms, Battery fuses, Charging current limit, Temperature compensation								
Automatic testing	Stardard every 72 hours (adjustable)								
GENERAL									
Regulations	EN62040-1, EN62040-2								
User Interface	4 lines LCD panel, Mimic leds, 5 vector buttons, buzzer, optional graphical touch-panel								
Indicators	P-N voltage, P-P voltage, Current, Power, Crest Factor, Frequency, PF, Service Time								
Advanced	Self diagnostics, 4 maintenance time indicators, Calibration over RS232								
Communication	2 x RS232 serial ports, 4 standard and 8 optional DRY contact alarm relays								
Inputs	EPO input, Interactive battery panel input, Genset Input								
Gensel kit	Standard (programmable)								
Software	Standard T-Mon UPS Management Software (3 clients + 1 server management)								
Alarm logging	Standard: with time & date 192 events, (optional) 512 events								
Protections	Power module over-temperature, Over current, Temperature high alarm								
Temperature range	0 °C - 40 °C								
Protection Degree	IP20								
Relative Humidity	90% max. Non-condensing								
Altitude	<1000 m above sea level (1% derate after each 100m over 1000m)								
Acoustic Noise	<57 dBA		<62 dBA			<64 dBA		<68 dBA	
Weight Without Battery	87	87	91	100	173	180	194	216	216
Dimensions (mm) (HxWxD)	400x815x1035				515x850x1440			775x910x1900	
OPTIONS									
Different Input & Output Voltage	110 / 208 VAC								
Transformer	Galvanic isolation transformer at the input & output								
Software	T-mon Admin Multi UPS monitoring, T-Mon Server 50-100-200 clients, DLOG log loader								
Adaptors	SNMP, MODBUS, RS485, Remote Panel								
Parallel Operation	Up to 8								

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UPS-GER Series

200-500 kVA Three Phase

TECHNICAL SPECIFICATIONS						
MODELS	**PL T 3160**	**PL T 3200**	**PL T 3250**	**PL T 3300**	**PL T 3400**	**PL T 3500**
Power (kVA)	160	200	250	300	400	500
INPUT						
Voltage	380/400 VAC 3 Phase + N + E ± 20% (415 VAC +15 %, +25 % optional)					
Frequency	50 Hz. / 60 Hz. selectable, ±5%					
Power Factor	> 0.99					
Harmonic Current Distortion (THDI)	< 4 %					
By pass Voltage	380 / 400 VAC 3 Phase + N , 4 Wires, ± 10%					
Voltage Distortions	< 10 %					
Protection	Fuses, Voltage & Frequency tolerance, Input power limit, Phase sequency indicator, Input PFC					
OUTPUT						
Power (kW)	144	180	225	270	360	400
Power Factor	0.9 (Standard), 1.0 (Optional)					0,9
Voltage	380/400 VAC 3 Phase + N ± 1% (415 VAC optional)					
Frequency	50 Hz. / 60 Hz. selectable					
Frequency Tolerance	Line synchronized: ± 2 % / Free running: ± 0,1 % (adjustable)					
Efficiency	up to 95%					
Crest Factor	3:1					
Overland Protection	100% - 125 % load: 10 min., 125% - 150 % load: 1 min., - > 150% load: by pass (adjustable)					
Other Protections	Advanced short circuit, Voltage tolerance, DC balance, Regenerative load, Current limiting					
THD (at 100% Linear Load)	< 3 %					
BATTERY						
Type	VRLA AGM / GEL (Standard), NI-Cd (Optional)					
Nominal Voltage	2x30 (±30): 60 batteries, ±360 VDC					
Float Charging Voltage	±405 VDC					
End of Discharge Voltage	±300 VDC					
Charge Current	10% of the total Output Power @ full load					
Battery Cabinet	External					
Battery Ambient Tempereture	25 ºC					
Protections	3 Level alarms, Battery fuses, Charging current limit, Temperature compensation (optional)					
Automatic Testing	Standard every 72 hours (adjustable)					
GENERAL						
Standards	EN62040-1, EN62040-2					
User Interface	4 lines LCD Panel, Mimic LEDs, 5 Vector Buttons, Buzzer, Gaphical Touch-panel (Optional)					
Indicators	P-N voltage, P-P voltage, Current, Power, Crest Factor, Frequency, PF, Service Time					
Advanced	Self diagnostics, 4 maintenance time indicators, Calibration over RS232					
Communication	2 x RS232 serial ports, 4 standard and 8 optional DRY contact alarm relays					
Inputs	EPO input, Interactive battery panel input, Genset Input					
Gensel Kit	Standard (programmable)					
Software	Standard T-mon UPS Management Software (3 clients + 1 server management)					
Alarm Logging	Standard: with time & date 192 events, 512 events (Optional)					
Protections	Power module over-temperature, Over current, Temperature high alarm					
Temperature Range	0 ºC - 40 ºC					
Protection Degree	IP20					
Relative Humidity	90% max. Non-condensing					
Altitude	<1000 m above sea level (1% derate after each 100m over 1000m)					
Acoustic Noise	< 68 dBA			< 72 dBA		
Weight Without Batters (Kg)	420	482	550	638	737	780
Dimensions (Mm) Hxwxd	1900x880x775			1900x1250x775		2020x1250x775
OPTIONS						
Different Input / Output Voltage	110 / 208 VAC					
Transformer	Galvanic isolation transformer at the input & output					
Software	T-mon Admin Multi UPS monitoring, T-Mon Server 50-100-200 clients, DLOG log loader					
Adaptors	SNMP, MODBUS, RS485, Remote Panel					
Paralel Operations	up to 8					

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Modular Online UPS

UPS-GER

20-200 kVA (380V/400V/415V)

DESCRIPTION

UPS-GER Series is a modular online UPS for sensitive equipments. The single cabinet power rating covers from 20kVA to 200kVA. With the latest IGBT three-level and full DSP control technology, the UPS-GER series delivers the best combination of reliability, hot-swappable and flexibility.

The PLRM Series develops the in-built transformer type range from 20kVA to 60kVA for customer's choices.

GENERAL SPECIFICATIONS

- Modular design up to 20 power modules in parallel online hot-swappable N + X redundancy
- Independent charger for each module and intelligently control the whole charging process, prolong the life time of the battery.
- Top and bottom cablle entry and connection
- Battery cold start, UPS can be powered on from the battery without utility
- Modular design with transformer (optional)
- High Power Density
- Integrated IGBT design
- Touch LCD display with abundant indormation
- Independent air channel to keep PCB's free of dust

TECHNICAL SPECIFICATIONS

MODELS		PLRM200/20	PLRM120/20	PLRM060/20	PLRM060/20-TX (in-built transformer)
Power (kVA)		200kVA/180kW	120kVA/106kW	60kVA/54kVA	60kVA/48kW
Power Module		PM20(20kVA)			
INPUT					
Phase		3 P + N + G, 380V/400V/415V			
Voltage Range		304V-478VAC (line-line), full load; 228V-304VAC (line-line), load decrease linearly according to the min phase voltage			
Frequency Range		40Hz - 70Hz			
Power Factor		> 0.99			
THDi		THDi<3% @ 100% linear load			
OUTPUT					
Voltage		380V/400V/415V			
Voltage Regulation		1.5 %			
Power Factor		0.9			0.8
THDu		THD<1%(linear load), THD<5.5%(non-linear load)			
Crest Factor		3:1			
Overload Capability		110% for 1 hour; 125% for 10min; 150% for 1min; >150% for 200ms			
BATTERY					
Voltage		± 240VDC			
Charge Power		20%* System Power			
Charge Voltage Precision		± 1%			
SYSTEM					
System Efficiency		Normal Mode: 95%; ECO Mode: 99%; Battery Mode: 95%			
Display		LCD + LED, Touch Screen + Keyboard			
IP Class		IP20			
Interface		Standard: RS232, RS485, Dry Contacts; Optional: SNMP			
Operation/Storage Temperature		(0ºC)-(40ºC) / (-40ºC)-(70ºC)			
Relative Humidity		0-95%(non-condensing)			
Noise		55dB (1 meter away)			
PHYSICAL					
Weight	Cabinet	179kg	145kg	105kg	400kg
	Power Module	22kg			
Dimension (W*D*H)	Cabinet	600x900x2000(mm)	600x900x1600 (mm)	600x900x1100 (mm)	600x900x1600 (mm)
	Power Module	440x590x134(mm)			

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Modular Online UPS

UPS-GER Series

10-90 kVA (380V/400V/415V)

DESCRIPTION

The rack modular, scalable, hot-swappable, online double conversion UPS ranging from 10kVA to 90kVA, with its flexible configuration of 3/3, 3/1, 1/1, compact structure, is the ideal choice for small and medium size data center

GENERAL SPECIFICATIONS

- Modular design compatible with 19" standart rack cabinet, convenient to be integrated with servers
- 10/15kVA power module in 2U height, saving great amount of space, easy for capacity expansion
- UPS can be integrated with battery cabinet, PDU and external maintenance bypass, offering excellent choice for data centers.
- The system intelligently controls the whole process of the charging and discharging, improving the lifetime of the battery.
- The system can be configured to 3/3, 3/1, 1/1 without derating
- 7" touch color LCD with graphic display
- System can intelligently shutdown some power modules to increase total load rate, achieving higher efficiency
- Energy internal circle technology, system can run with full load saving more than 90% energy

TECHNICAL SPECIFICATIONS

MODELS		PLRM060/10X	PLRM040/10X	PLRM030/10X	PLRM20/10X	PLRM090/15X	PLRM045/15X	PLRM030/15X
Power (kVA)		60kVA/60kW	40kVA/40kW	30kVA/30kW	20kVA/20kW	90kVA/90kW	45kVA/45kW	30kVA/30kW
Power Module		PM10(10kVA)				PM15(15kVA)		
INPUT								
Phase		3 P + N + G, 380V/400V/415V						
Voltage Range		304V-478VAC (line-line), full load; 228V-304VAC (line-line), load derated linearly						
Frequency Range		40Hz - 70Hz						
Power Factor		> 0.99						
THDi		THDi<4% @ 100% linear load						
OUTPUT								
Voltage		3Phase: 380V/400V/415V 1 Phase: 220V/230V/240V						
Voltage Regulation		1.5 %						
Power Factor		1						
THDu		THD<1%(linear load), THD<5.5%(non-linear load)						
Crest Factor		3:1						
Overload Capability		110% for 1 hour; 125% for 10min; 150% for 1min; >150% for 200ms						
BATTERY								
Voltage		± 240VDC						
Charge Power		20%* System Power						
Charge Voltage Precision		± 1%						
SYSTEM								
System Efficiency		Normal Mode: 95%; ECO Mode: 98%; Battery Mode: 94.5%						
Display		7.0" Color touch screen LCD + LED + Keyboard						
IP Class		IP20						
Interface		Standard: RS232, RS485, Dry Contacts; Optional: SNMP						
Operation/Storage Temperature		(0ºC)-(40ºC) / (-25ºC)-(70ºC)						
Relative Humidity		0-95%(non-condensing)						
Noise		56dB @ 50% load (1 meter away)						
PHYSICAL								
Weight	Cabinet	85kg	51kg	55kg	42kg	85kg	55kg	42kg
	Power Module	15.3kg				15.5kg		
Dimension (W*D*H)	Cabinet	485x751x1033 (21U)	485x697x575 (11U)	485x751x575 (11U)	485x697x398 (7U)	485x751x1033 (21U)	485x751x575 (11U)	485x697x398 (7U)
	Power Module	436x590x85(2U)						

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Modular Online UPS

UPS-GER Series

80-500 kVA (380V/400V/415V)

DESCRIPTION

The UPS-GER Series Modular, online UPS ranging from 40kVA to 500kVA is designed to protect any critical load for medium and large data center achieving maximum availability. The UPS-GER Series feature the latest technology of 3-level technology and PFC input control, which guarantees high efficiency of 96% and ultra-reliability. 3 units can be paralleled for capacity or redundancy up to 1500kVA, making it an excellent choice for medium and large facilities.

GENERAL SPECIFICATIONS

- Compact design, 500kVA in one cabinet (1.45m²)
- 50kVA power modules in 4U height, easy for capacity upgrade
- High efficiency in double conversion mode up to 96%
- The system intelligently control the whole process of charging and discharging, improving the lifetime of the battery.
- System can be configured 40kVA to 500kVA in one single cabinet and can paralleled 3 units for a capacity up to 1500kVA
- 10.4" touch color LCD with graphic display.
- System can intelligently shutdown some power modules to increase total load rate, achieving higher efficiency
- Provides RS232, RS485, USB, SNMP, AS400 and programmable dry contacts.

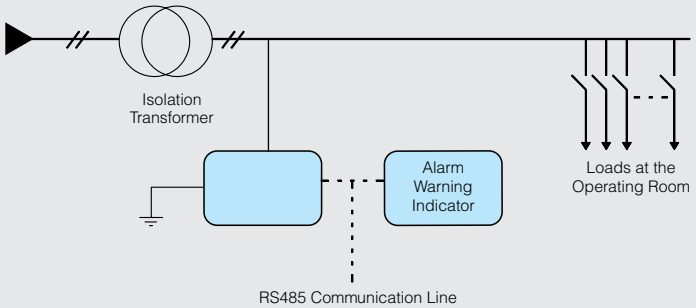
TECHNICAL SPECIFICATIONS

MODELS		PLRM500/50X	PLRM400/40X
Power (kVA)		500kVA/450kW	400kVA/400kW
Power Module		PM50X(50kVA/45kVA)	PM40X(40kVA/40kW)
INPUT			
Phase		3 P + N + G, 380V/400V/415V	
Voltage Range		304V-478VAC (line-line), full load; 228V-304VAC (line-line), load derated linearly	
Frequency Range		40Hz - 70Hz	
Power Factor		> 0.99	
THDi		THDi<3% @ 100% linear load	
OUTPUT			
Voltage		380V/400V/415V	
Voltage Regulation		1.5 %	
Power Factor		0.9	1.0
THDu		THD<1%(linear load), THD<5.5%(non-linear load)	
Crest Factor		3:1	
Overload Capability		110% for 1 hour; 125% for 10min; 150% for 1min; >150% for 200ms	
BATTERY			
Voltage		± 240VDC	
Charge Power		20%* System Power	
Charge Voltage Precision		± 1%	
SYSTEM			
System Efficiency		Normal Mode: 96%; Battery Mode: 96%	
Display		10.4" Color touch screen LCD + LED + Keyboard	
IP Class		IP20	
Interface		Standard: RS232, RS485, USB, Dry Contacts(programmable) Optional: SNMP, AS400, Parllel Kit, Battery Cold Start(standard for 250kVA and above), Lightning protection components, Dust Filter, LBS	
Operation/Storage Temperature		(0ºC)-(40ºC) / (-25ºC)-(70ºC)	
Relative Humidity		0-95%(non-condensing)	
Noise		72dB @ 100% load; 69dB @ 45% load (1 meter away)	
PHYSICAL			
Weight	Cabinet	900kg	
	Power Module	45kg	44kg
Dimension (W*D*H)	Cabinet	1300x1100x2000(mm)	
	Power Module	510x700x178(mm)	

NOTE: All specifications are subject to change without notice. Consult Germarel Technical Support Department for special applications. All names used above are registered trademarks of their respective owners.

Hospital for IT Systems

Germarel IT



Special Hospital Isolation Solutions (compatible with IEC 60364-7-710 standards)

IT Systems are mandatory to be used in Group 2 rooms for the safety of patients and healthcare workers against electrical shocks. The primary difference that separates this system from grounded network (TT or TN) is that it doesn't have operation grounding. This is provided by an isolation transformer. The second important feature is that all the loads, which are connected to the distribution system, are grounded separately. Places as Operating Rooms, Intensive Care Rooms, Premature Babies Rooms and Angiography Rooms are protected and well cared with our IT Systems including Isolation Transformer, insulation values, load and temperature monitoring unit and current transformer consists of and alert notification system which is produced in accordance with TS EN61588-2-15 Standard.

Usage Areas

- Intensive care rooms
- Premature babies' rooms
- Angiography control-medical examination rooms
- Operating rooms
- Surgery preparation and recovery rooms
- Anesthesia Rooms
- Heart Catheterization rooms

Superior Features

- Over 4000 Units of operating STS Systems with superior knowledge.
- Uninterruptable Power and Energy reliability with STS.
- Transformer Power between 0.5 and 10kVA.
- Lowering the leakage current to microampere level.
- Fault detection system
- Monitoring of 24V loads.
- The multiple communication capability between devices
- Life safety of patient, doctor and healthcare workers.
- Customized panel design
- Easy and simple installation on place

General Information

- 50- 500 kΩ insulation resistance
- 5-50A load current
- Menu selection from the LCD panel
- The transfer time of less than 5 ms
- 4 different languages
- The static transfer switch (STS) system via RS232 / 485 data sharing

Isolation Transformer

Isolation Transformers have an important part in providing insulation between AC Input (Network) and the critical loads. with the insulation transformer the energy in the room can be isolated from the network. This way current leakage current in the room is lowered from mA level to µA. Another important feature…

Transformer Features

- Nominal Power of Transformer: 10kVA
- Single Phase input and output.
- For three phase system the voltage between phases must be 230Vac.
- Short circuit voltage should be less than %3.
- The blank current should be less than %3
- Initial current must be less than 8 times the rated current.

Germarel IT

Touch Screen Control Panel

- Microprocessor controlled, smart and flexible design
- 6-digit hour and 6-digit LED display timer
- User-friendly touch screen can do all the settings
- Multiple language options menu
- Easy to clean front surface
- 2mm stainless front panel complies with the standard DIN 4301
- Operation ON / OFF, flow, damper, UV lamp, gas discharge
- Electric heating, air-conditioning controls
- Hands-free phone, and internal speaker Hi-Fi amplifier
- Control of Lighting Group

TECHNICAL SPECIFICATIONS	
SCREEN TYPE	**5.7 "TOUCH LCD, 2X16 LCD DISPLAY**
Clock Display	4 cm 6-Digit LED Display
Stopwatch screen	4cm 6-Digit LED Display
User Data Entry	Touch Panel
MEASUREMENTS	**UNIT / MEASUREMENT RANGE / INPUT INFORMATION**
Temperature	° / 0 ~ 50 ° / 0 ~ 10V analog
Humidity	% / 0 ~ 100% / 0 ~ 10V analog
Room pressure	Pascal / 0 ~ 100Pa / 0 ~ 10V analog
Filter Pollution Level	Pascal / 0 ~ 100Pa / 0 ~ 10V analog
OUTPUTS / LED INDICATORS	
Lighting	4 Channel / (On-Off) -(L1/L2/L3/L4)
Operation Lamp	2 Channel / (On-Off)
Negatoscope	1 Channel / (On-Off)
UV Lamp	1 Channel / (On-Off)
Lighting Dimmer	1 Channel
Negatoscope Dimmer	1 Channel
Music	4 Channel / (On-Off)
Air conditioning (Full / Half Flow)	2 Channel / (On-Off)
Reserve	3 Channel
Heater	1 Channel / (On-Off)
Alarms	(On-Off)
Alarm Mute	(On-Off)
INPUTS	
1-10V Analog Sensor Input	16 Channel
Music input	4 Channel
GAS PRESSURE GAUGES	**(HIGH / NORMAL / LOW)**
O2	OK
N2O	OK
CO2	OK
Air5	OK
VAC	OK
AUDIBLE WARNING	**BUZZER**
Connected to the automation system	TCP IP - RS485 - CANBUS
Front panel	DIN 4301 (2mm stainless steel)
Nutrition	220V - 50Hz
Internal Dimensions (W*H*D)	440*455*90 mm
External Dimensions (W*H)	490*475 mm
NOTE: All above technical specifications are subject to change without notice. All specifications are just simple guidelines. Refer to the Germarel for special applications. All trade names mentioned above are registered trademarks of their respective owners.	

- Multi-Color 17" Touch Screen
- Windows-Based Operating System
- Mail and Messenger usage
- Communication with Automation,
- Elegant design
- Other features with user-friendly menu and application options

BATTERY LVD (Low Voltage Disconnect) RELAY

GENERAL SPESIFICATIONS

- Battery Low Voltage Disconnect Relay
- Protects battery from deep discharges and prolongs battery lifetime
- 12V / 24V and 5A / 10A models
- Led indicator for relay status
- On / Off Switch
- Fuse Protection for Overcurrent and Short-Circuit
- Adjustable disconnect point
- DIN Rail Product

DC VOLTAGE MONITOR RELAY

GENERAL SPESIFICATIONS

- Monitors DC Voltage and activates relay
- Microprocessor control
- 12V / 24V / 48V / 110V / 220V models
- Led indicator for relay status
- 10A Power Relay Output
- DIP switch for various options
- Adjustable high and low points
- DIN Rail Product

DC INSULATION MONITOR

GENERAL SPESIFICATIONS

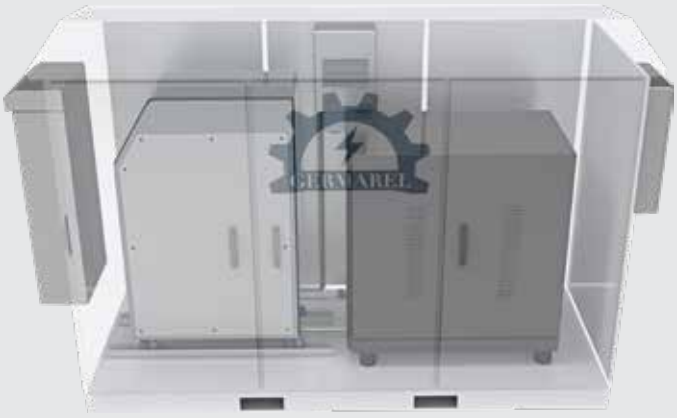
- Monitors DC insulation and leakage current
- Microprocessor control
- 24V / 48V / 110V / 220V models
- Seperate detection for positive and negative
- Led indicator for power and alarm
- DIP switch for various options
- Test and Alarm Reset buttons
- 2A Output Relay
- DIN Rail Product

RS232/RS485 CONVERTER

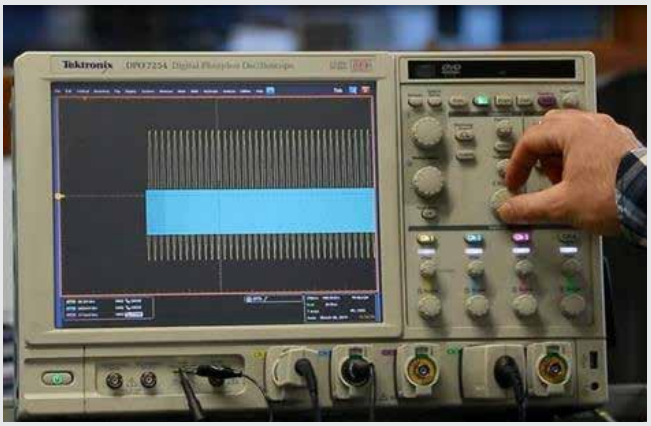
GENERAL SPESIFICATIONS

- Performs RS232 / RS485 physical layer conversion
- Led indicators for Power On, RX and TX
- 9 - 18V Power Supply
- DIN Rail Product

Germarel GmbH



Used Technology



Mentor Graphics

PTC

SolidWorks