



## TECHNICAL DATA

### Input data

AC Input voltage	230 Vac (175 — 255 V)
AC Frequency	50 Hz (47 — 63 Hz)
Inrush current according to	EN61000-3-2
Power factor	≥ 0.98

### Rectifier IM400

Output voltage (main ac supply present)	54.6 Vdc 48 Vdc nominal
Output power	400 W nominal (7.5 A/54.6 Vdc)
Output current limit	7.8 A
Output dynamic response (change load 20% to 100%)	1.5%
Output load line response	±1%
Output voltage noise	≤50 mV <sub>eff</sub> , ≤100 mV <sub>p-p</sub>
Psometric noise	U <sub>eff</sub> ≤ 2 mV (according to CCITT norms)
Efficiency	η > 87%

### System data

Output voltage	54.6 Vdc, nominal
Charging current	3 A, standard (30 Ah capacity) adjustable: 2.2—22 A
Temperature compensation	4 mV/C°/cell standard, adjustable: 1—5mV/C°/cell
Max. Output voltage protection (adjustable using BCU)	50—58 Vdc
Max. Load current protection (adjustable using BCU)	n x 7.5 A

n - number of rectifier modules

### Output specifications under absence of main ac supply

Output voltage	40 — 56 Vdc
Low voltage battery disconnect (LVD) turn-off threshold adjustable	40 — 44 Vdc
Battery turn-on threshold	49 — 52 Vdc

### DC (load) distribution

DCD2	2 terminal connectors, up to 20A (automatic) fuse
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DCD6	6 terminal connectors, up to 10A (slow) fuse
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### F - remotes alarms interface (DB9 connector)

Interface	RS232
Number of signals (alarms)	8
Isolation	optoisolation

Batteries	48 V/24 — 180 Ah
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### Designed and tested according to

Safety standard	EN 60950 (UL1950)
EMC standard	EN 55022/CISPR22, class A

### Environmental

Ambient operating temperature	0 to +50°C
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### Dimensions (V x L x H)

Rectifier (IM400)	150 x 105 x 200 mm
ETSI shelf (RE-SN1/2)	150 x 533 x 220 mm
ETSI cabinet	1000/1200/2200 x 600 x 300 mm



SN12

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## Power Supply Systems

# SNN12

## Power Supply System 54 Vdc / 3 x 7.5 A

### ■ Compact modular power supply system:

- SN12 - one shelf (3 rectifiers modules), power 1200 W
- SNN12 - two shelves (6 rectifiers modules), power 2400 W

### ■ Full front access design – ease of installation and operation

### ■ Parallel working of rectifiers – active current sharing, true redundant configuration (N+1)

### ■ Natural convection cooling – no fans

### ■ Power factor 0.98 (IEC 1000-3-2)

### ■ Two independent battery breaker, up to six load breakers

### ■ Optimal Charging of Batteries

### ■ Programmable low voltage disconnect (LVD)

### ■ Integrated control and monitoring system, SUNCE-M



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**Description**

SNN12 system is power solution designed for telecom, datacom and network applications (48 Vdc nominal) which need to have reliable and permanent DC power supply regardless on main supply failure.

The main parts of SNN12 system are: cabinet, up to two shelves (main and for expansion), and batteries (working and reserve). SNN12 is modular and configurable for different load power: 400, 800 and 1200 W (SN12- main shelf, up to 3 rectifiers units) or 1600, 2000 and 2400 W (two shelves, up to 6 rectifiers units) or 2 ETSI shelves (up to 6 rectifiers). In redundant configuration off power supply system (N+1), reserve rectifier is in parallel work with others rectifiers. Accuracy of rectifiers active current sharing is 5%.

Batteries are paralleled with load and system output. Battery management includes controlled current charging of batteries independent of load current, IU characteristic, automatic temperature compensation with additional cable and sensor and programmable low voltage disconnect.

**System overview**

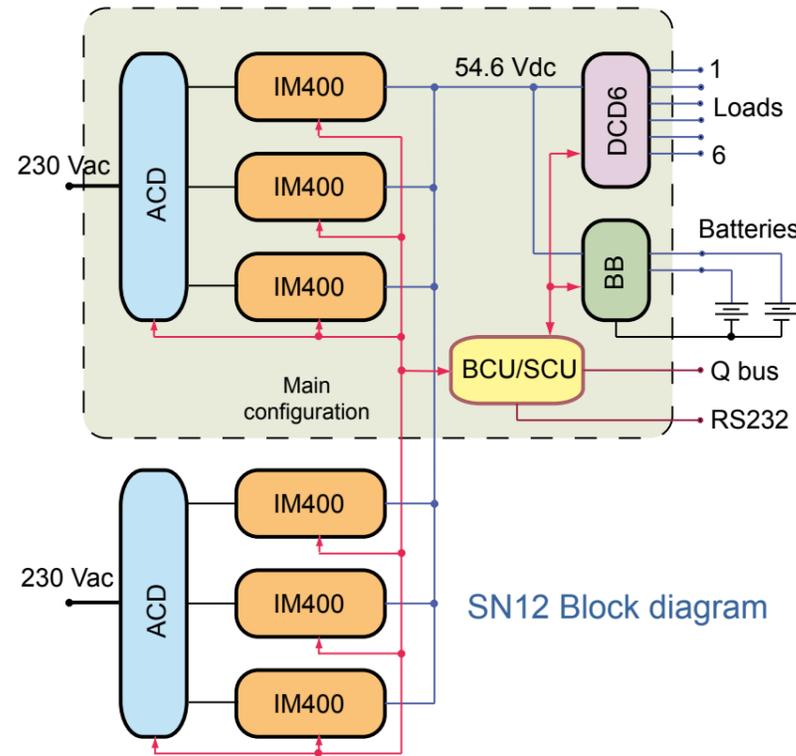
SNN12 system is composed of:

- Up to two AC distribution (ACD)
- Up to 6 rectifier modules (IM400), power of each rectifier 400 W (nominal)
- Load (DC) distribution (DCD2/6) with two or six output fuses (terminals ended with connectors)
- Low Voltage Disconnect module (battery board - BB) with battery breakers and terminal connectors (double)
- BCU – basic control unit (module) for control, monitoring and communications with LCD display and keyboard for self-guided controller operation, LEDs, RS232 and other interfaces
- Batteries

**Protections**

Protections include:

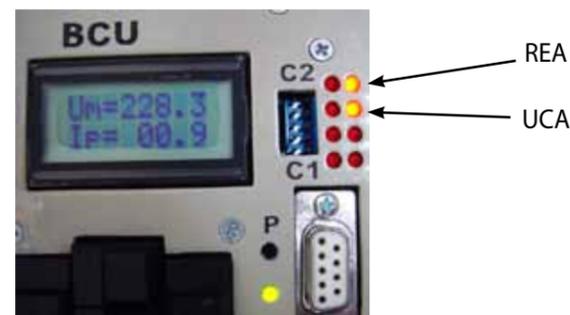
- Overload (current limit) and short circuit protection, active and passive, programmable
- Electronic Low Voltage Disconnect (LVD) - over discharging protection; value of battery turn-off threshold is programmable through keyboard or RS232 interface
- Battery current overcharging – value of charging current is controlled (apart of control module - BCU) and programmable through keyboard or RS232 interface (BCU)
- Over Voltage Protection (OVP) – output dc voltage and input ac voltage, active and passive
- Thermal rectifier protection (active)



SN12 Block diagram



Rectifier module IM400



**System monitoring**

System monitoring and control can be achieved locally or remotely - integrated through telecommunication network.

All main voltages and currents in system are measured and can be readout on display (also alarms) or via remote user PC-based software package; accidental data, independently of usual measurements are buffered in history files.

- Through keyboard and LCD display (local monitoring and control) next values are enable to adjust:
  - Number of shelves and number of rectifiers
  - Maximal load voltage and current
  - Battery turn-off threshold
  - Maximal battery charging current
- Light indication of basic system alarms are realized with LEDs and also monitored with BCU. These alarms are:
  - Low ac input voltage (main supply alarm – MSA)
  - Rectifier fail (rectifier error alarm – REA)
  - Battery voltage less than 44.5 Vdc i.e. rest capacity ≤10% (under voltage alarm – UVA)
  - Battery alarm less than 53 Vdc (under charge alarm – UCA)
  - Input ac fuse failure (main fuse failure – MFA)
  - Battery fuse failure (battery fuse alarm – BFA)
  - Output load fuse failure (distribution fuse alarm – DFA)
  - Rack door open (open door alarm – ODE)
- Green and red LED on each rectifier indicates correct work or rectifier fail.
- Green and red LED on battery board indicates correct connection and battery employing.
- Integrated System monitoring of basic alarms through telecommunication network is achieved in conjunction with other Iritel equipment using:
  - Q2 bus, with graphic oriented PC based software package (SUNCE-M option – network manager),
  - SN12 connection with flexible multiplexer FM2x2, using RS232 interface.

**Batteries charging process**

