

OUTDOOR HYBRID POWER SUPPLY

GRID, DIESEL-PETROL-GAS GENERATOR, PHOTOVOLTAGE , WIND, BATTERY BANK, INVERTORS

- 19" rack free 2 x 20U
- Free cooling standard
- AC cooling and heating
- Battery bank
- 48 V / 150 Ah x4
- Diesel-Petrol-Gas generator
- 3-25 KVA
- Diesel-Petrol-Gas tank
- 400 lit
- Fire protection Aerosol
- Wandal protections

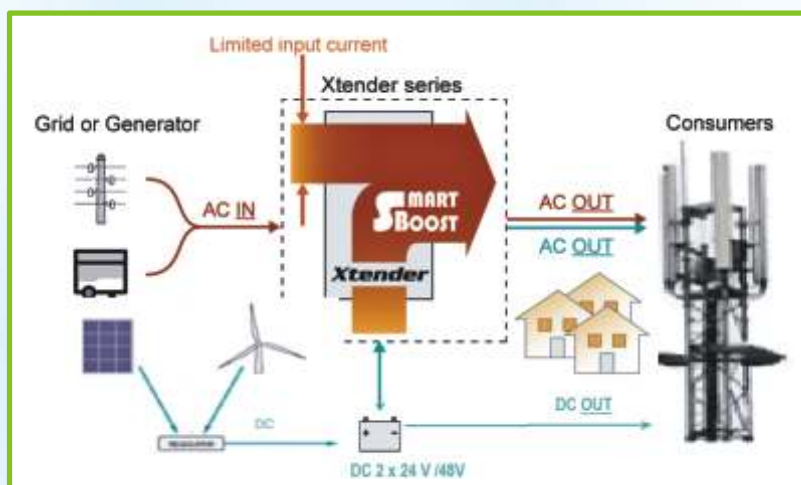


TECHNICAL DESCRIPTION

GENERAL DESCRIPTION

This cubicle is designed to be installed and to operate outdoor. It is designed to enable support of

- Telecommunication equipment
- Power supply of rural units with problems in grid lines
- Island work in rural areas in need of continuous power supply for telecommunication devices, police stations, schools, small medical facilities
- Pumping stations to supply water, gas, oil and similar where continuity is necessary or the current capacity of power is greater than the one of the Grid or the diesel generator or where there are Grid problems in general or in the absence of one. The concept is based on Intelligent Control Panel that depending on the purpose of the station and hybrid concept enables accessories with full functionality.



- DC 48 V power supply with the consumer; power up to max 40 KVA
 - * PV installed capacity option basic block P = 5 KW * X
 - * Wind generator option 0,4-20 KW
 - * Diesel-petrol-gas generator 3-24 KVA
- * Battery Bank 4 x 12V x150 Ah * max 8 in an existing rack
 - * Rectifaer AC / DC 230-400/48 V 0,8 - 48 KVA
 - * X tender smart 8 KVA * X



CONFIGURATION DESIGNS

- Door alarm
- Bottom plate
- Surge protection class (A - D option)
- 230 V AC socket
- Anti condensation heater
- Cabinet Fan
- Free cooling
- Battery fuse protection and LVD
- Temperature compensation
- Load output DC-distribution (6 x MCB)
- Communication USB + RS232 and RS485 ethernet

OPTIONS

- Grid UTO 3/5 10-125 A
- AC Voltage corector
- PV Panel 5 Kwe *X
- Wind Generator 0,4 - 20 KW *X
- Diesel-Petrol-Gas Generator 1500/3000 rpm 3-24 KVA
- Fuel tank 100 - 400 lit.
- AC conditioner all manufacturing
- Xtender 2-8 KVA *X
- Rectifier: 0,8 - 40 KW
- Door open control
- Water sensor
- Smoke detector
- Fire protections Aerosol
- Inverter AC/DC 0,4 - 8 KW *X
- Load output AC-distribution (3xMCB)
- Accessories
 - Storage sets
 - Transportation sets
 - Operating sets
 - Maintenance sets



CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS

- **Temperature**
 - Storage temperature: -40°C to +80°C
 - Operating temperature: -40°C to +55°C with internal heater and forced air cooling
- **Humidity**
 - Storage humidity: 5% to 95%
 - Operating humidity: 5% to 95%
- **Altitude**
 - Operating: 1000 m (above, power derating of 1% each 100 m up to 3 000 m)

MECHANICAL CHARACTERISTICS (HYBRID POWER SUPPLY AND BATTERY CABINET)

- Height: 2500 mm + PV construction options
- Width: 1260 mm + gascet+ AC outsyte element
 - Depth: 1200 mm
 - Weight: options Kg.
 - Degree of protection: IP 54.
- Free Cooling : forced with air cooling on the back side up to 45°C outside, which ensures 55°C inside.

CABINET EQUIPMENT

- The cabinet is mainly equipped with:
- Surge arrestor class C connected on the main input,
 - Main input protective circuit breaker
 - Free 19" Rack 2 * 20 U
(– rack mountable Rectifier sets) for telecommunications



OPTIONAL CABINET EQUIPMENT

- Smoke detector
- Cabinet interior lighting controlled by the opening of the doors
- Water level sensor

INPUT

Option

- * Grid Nominal voltage 230 VAC single-phase or 400 VAC three-phase with neutral
 - * PV panels 24/48 V 100 W - xxx W
 - * Wind generators DC24/48 V or 230/400 V 400 W - xxx KW
 - * Diesel-Petrol-Gas Generators 3000/1500 rpm 230 - 400 V 3 KW - 30 KW
- Exceptional range without damage 80 V to 280 V with power derating
 Frequency 44 Hz to 66 Hz
 Power factor > 0,99

OUTPUT

Nominal DC voltage 48 VDC
 Floating voltage Adjustable between 42 VDC and 58 VDC
 AC 230 / 400 V 400 - 40 000 W



PROTECTIONS

- Mains protection inside each rectifier module by fuses
- Automatic shutdown on main AC undervoltage and overvoltage with automatic recovery
- Automatic shutdown on DC overvoltage (manual reset on the rectifier module)
- Output power derating depending on module internal temperature
- Output current automatic limitation
- Battery temperature protections

EFFICIENCY
 >90%

INDICATORS AND ALARMS

ALARM LOOPS

The following alarms, delivered by the FP7320, are available across volts-free contacts:

- Main off
- Urgent alarm
- Non-urgent alarm
- Door open
- Smoke detector (optional)
- Water sensor (optional)
- Neutral position on breakers
- Main current protection
- Improved main detection 3 phase 3 wire or 1/1
- Improved main detection 3 phase 3 wire or 1/1
- Improved modem diagnostics
- Remote control sources (10) can be accessed via SCADA
- Additional electrical trip options
- Additional start delay functions
- Oil pressure values from additional engines
- Front panel editing of scheduler
- Now displays kW as % of rated kW setting
- Additional programmable logic



STANDARD FEATURES

Backed up real time clock
 Ethernet communications
 Multiple date and time maintenance scheduler
 132 x 64 pixel LCD display
 Configurable display languages
 Programmable event logging (250), showing reason, date and time
 Robust module enclosure
 Five key menu navigation
 Durable soft touch membrane buttons
 Fully configurable via PC software
 LED and LCD alarm indication
 Engine exercise mode
 Configurable start & fuel outputs
 kWh monitoring (mains or generator or loads)
 Battery voltage monitoring starters 12 V
 Battery voltage monitoring storage 48 V
 Automatic load transfer
 Configurable inputs
 Configurable outputs

Configurable timers and alarms
 Modbus RTU
 Magnetic pick-up options
 Selected front panel programming
 Multiple date and time exercise scheduler
 Configurable display pages
 Programmable load shedding/acceptance
 Mutual standby
 Preventative maintenance
 kW overload protection
 3 alternative configurations
 Unbalanced load protection
 SMS messaging (external modem required)
 Power save mode
 Regulation charging battery bank from PV and Wind generators
 PIN protected programming
 Configuration file downloads from an external memory device
 RS232 & RS485 communications
 DSENet® compatible

Benefits

Hybrid power supply

The hybrid power station has huge savings by saving in hours of work and saving in fuel spending.

The environmental side of the energy station is versatile.

PV panels accumulate renewable energy in the battery bank. The optimization depends on the developer's plans.

Wind generator accumulates renewable energy in the battery bank.

The optimization depends on the developer's plans.

AC 230-400 V / DC48 V inverter with a coefficient of beneficial effect up to 98%.

The cogenerator system works only when the battery bank drops below the previously set level, and when the temperature in space - battery bank drops below the previously set level.

132 x 64 pixel ratio makes information easy to read.

Real time clock provides accurate event logging.

PC software is license free.

Set maintenance periods can be configured to maintain optimum engine performance.

Ethernet communications provides advanced remote monitoring at low cost.

Modules can be integrated into building management systems.

Preventative maintenance avoids expensive engine down time.

Advanced PCB layout ensures high reliability.

Operation

The modules are operated via the START, STOP, AUTO and MANUAL soft touch membrane buttons on the front panel. The FP7320 also has a TEST button.

Both modules include load switch buttons.

The main menu system is accessed using the five navigation buttons to the left of the LCD display.

	Power input		
1	Mains (Gryd)	230 / 400 V 50 Hz	80-280 v 44-68Hz
2	Diesel-Petrol-Gas Gen set	230 / 400 V 50 Hz	1500/3000 RPM 3-24KVA
3	PV Panel	100 W12 V-265We 56V	
4	Wind Generator	0,4-20 KW	
5	Battery	12V /150 Ah VRLA	
6	Battery rectifier	48 V /10-55 A *24	see tec characteristic
7	Inverter	DC/AC 48 / 230 400-4000 W*10	
8	Free cooling	Standard	
9	Control Panel	FP7320	
10	Ac conditioners	Avto restart	
11	X Tenders	Options	
12	Fire protections	Aerosol	
13	Micro A/C for battery room	Standard	
14	19" 2*20 U free rack		
15	Air filters		



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