New

Biosirus

Smart Hybrid Inverter

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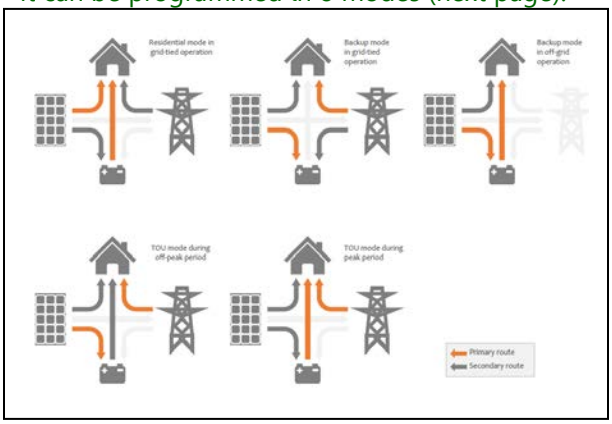
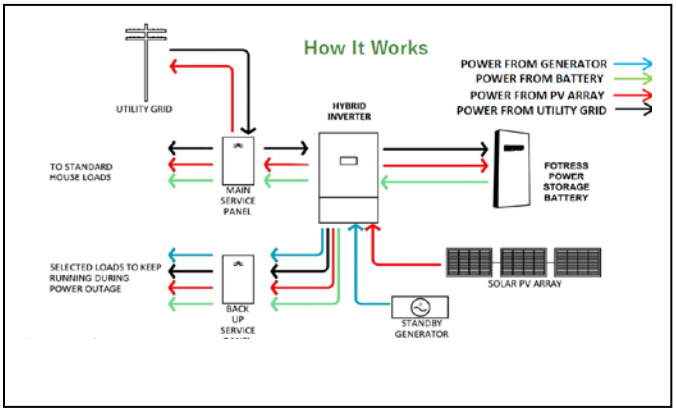
5 KW System: All-in-one configuration; 8 programmable modes
Adaptable to Any 48V Battery (AGM, GEL, LFP, LiON, Others)
With/Without Grid-tie; With/Without PV

- **Application:**
  - Residential
  - Small Businesses
  - Small Urban and Rural Community Centers:
  - Scalable Options: PV Input; Grid Input; Load Output; Generator Backup
- **Features:**
  - Self Contained 5 KW Smart Inverter and electrical sub-panel
  - Adaptable to any battery system (if deployed)
  - All-in-One Configuration for very easy connections
  - Programmable for TOU, Peak Shaving, Load Shifting, etc.
  - Electrical panel includes breakers for emergency sub-panel
  - Grid-tied or Remote application; With or Without Solar PV panels
- **How Does It Work:**
  - Each Inverter: Two PV Strings, each string with own MPPT (for PV deployment)
  - All-in-One (IP20 Enclosure) : Integrates wiring for PV, Charger, Inverter, Battery, Load, Control, Communications and Backup Generator
- **Technical Data:**
  - **Models: 5 KW (Max 3 x 5 KW Stackable)**
  - **PV Max 6.5 KW:** Single/Polycrystalline**;** 2 Strings (13A ea.); Voc 120-460V; String MPPT 230-460V
  - **Battery Size:** 7 KW Peak; 48V (40-58.4 V); 10-15 KWh;
  - **Surge Power**: 5.5/6.5/7 KW (40/5/1 seconds)
  - **AC System:** Current output 21 Amps max; 240/120V, 60Hz. (split phase) or 230V (single phase), 50 Hz.;
  - **Grid Support:** 0.7 pf (lead/lag); Freq. ride-through 57-62 Hz.; voltage ride-through 40-120% Vac; Volt-Var (Q)
  - **Grid Power Loss Auto Transfer:** 33 Amp, 20 milli-sec transfer relay
  - **System Disconnects:** PV Disconnect; Inverter Disconnect; Battery Disconnect
  - **Certificates:** UL 1973 (in progress); UL 1741/SA; IEEE 1547; UL 1642; UN/DOT; RoHS Compliant
- **Operation:**
  The hybrid inverter provides power to essential loads by utilizing power from the grid, PV panels, the batteries or a backup generator. When the PV panels produce enough power, the inverter supports the essential loads, feeds back to the grid and charges the battery, all at the same time. When the PV panels do not generate sufficient power, the inverter takes power from the utility. Upon loss of both PV panels and the grid, battery power is used as a last resort. It can be programmed in 8 modes (next page).





Tech Talk: *Smart hybrid systems provide flexibility to meet customization as well as regulatory changes*

Most applications currently deploy single-purpose inverter systems coupled on the AC side (one for each application such as Battery, PV and others). This results in many technical and business deficiencies such as lower overall efficiency, higher losses, much larger space requirements, multitude of distribution/electrical sub-panels as well as inflexibility in reconfigurations with time, needs and regulatory changes.

The smart hybrid inverter system is an all-in-one electrical system that connects to various inputs seamlessly and can be configured in 8 programmable settings based on today and future needs. Its all you really need. It is scalable both on the inverter side (max three stacks to 15KW) as well as on the battery side (max three stacks to 15 KWh) and PV side (6.5 KW max).

The flexibility of this system is awesome. Apart from its creative programming capability, the smart hybrid inverter manages all inputs/outputs effortlessly (including battery DoD set points for various configurations). In addition, it can be connected to a backup generator as a last resort. The auxiliary communications interfaces are numerous with many options. These include Auxiliary port for generation functions and external displays, paralleled Can-BUS port, two RS 485 ports (Slave/Master) and a USB port.

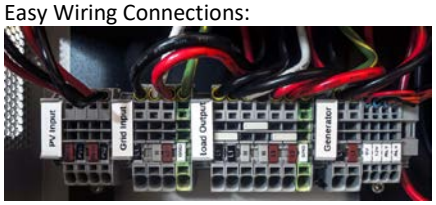
The system has smart grid support functions too (UL 1741 SA). The fixed power factor correction has a wide band of 0.7 pf (lead/lag). The frequency ride-through is 57-62 Hz, and the voltage ride-through is from 40-120% Vac. In addition, it has an auto Volt-Var (Q) function to maintain PCC voltage between 0.88-1.1 Un with maximum 3.5 KW and 3.57 KVar (lead/lag) injections (ramp rate 500 Var per second).

The following table describes the various programming modes:

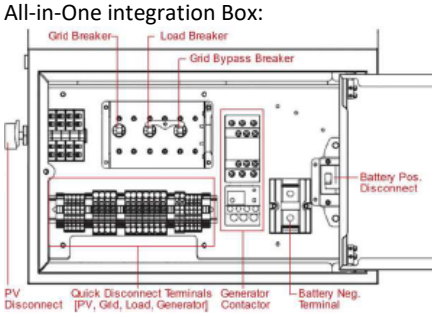
MODE DEFINITION		CHARGE FROM	FEED GRID FROM	PV USE PRIORITY			LOAD PRIORITY		
				1	2	3	1	2	3
1. Back-up (default)		PV or Grid	PV Only	Batt.	Load	Grid	PV	Grid	Batt.
2. Residential		PV Only	PV Only	Load	Batt.	Grid	PV	Batt.	Grid
3. Back-up w/o Feed-in		PV or Grid	None	Batt.	Load	-	PV	Grid	Batt.
4. Residential w/o Feed-in		PV Only	None	Load	Batt.	-	PV	Batt.	Grid
5. Time-of-Use (TOU)	Off-Peak	PV or Grid	PV Only	Batt.	Load	Grid	PV	Grid	Batt.
	Peak	PV Only	PV Only	Load	Batt.	Grid	PV	Batt.	Grid
6. TOU w/Batt. Feed-in	Off-Peak	PV or Grid	PV Only	Batt.	Load	Grid	PV	Grid	Batt.
	Peak	PV Only	PV or Batt.	Load	Grid	Batt.	PV	Batt.	Grid

Smart Features

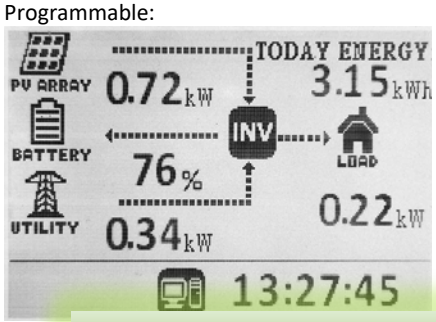
Easy Wiring Connections:



All-in-One integration Box:



Programmable:



And Savings Too:

The Smart inverter offers significant opportunity for energy savings and savings in demand charges (where applicable) by being able to programme for a customised solution. *This ensures savings in energy and a faster solution. A two-for-one benefit.*

Best Value Applications:

Parameters	Platinum Savings	Gold Savings	Silver Savings	Bronze Savings
TOU	*****	****	***	**
Net Metering	*****	****	***	**
Demand Charges	*****	****	***	**
Frequent Power Outages	*****	****	***	**
Electricity Tariff (US $/Kwh)	>0.15	0.12	0.10	0.08
Peak – Low Tariff	4:1	3:1	2:1	< 2:1
Typical Pay back (simple ROI)	1-2 Year	2-3 Years	3-4 Years	4-5 Years

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Call us for any details or a trial project