

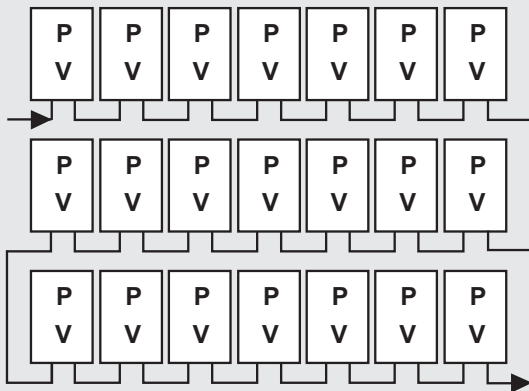
LEECH HV PV SOLAR MODULES

MERITS OF PARALLEL OVER SERIES PV ARRAY

CONVENTIONAL Array

Many series strings of panels in parallel

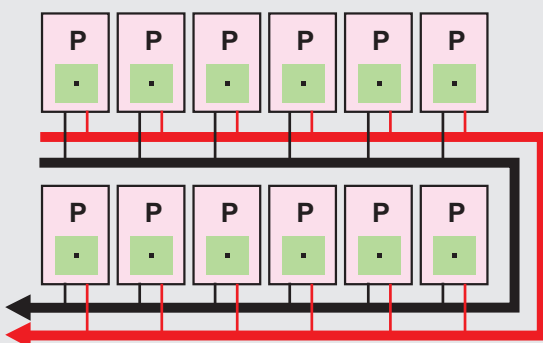
- Since each module V_{out} is about 30V, series stringing is necessary to develop High Voltage
- Essential to select identical panels (matching) for stringing to avoid power loss
- Shadows/dirt covering a portion of one module in a string causes up to 50% power loss
- Module Arrays must all modules have to be same type; mono or polycrystalline or film
- Effective loss in energy harvest 12- 25%



LEECH HV-PV All Parallel Array

Parallel Modules feed in a single bus bar

- Since LEECH HV PV Module has high voltage output, no need for series stringing; Connect all panels parallel
- LEECH HV PV Modules are all identical and each deliver peak Power – no need to match panels
- Shadow/dirt covering a portion of one module will cause no loss of power from any other module
- All MITRAMAX Modules have identical output characteristics; whether mono or polycrystalline or film
- Energy Yield loss limited just the affected panels



UNIQUE FEATURES

- Extracts maximum solar energy 'like a Leech' from every PV Module in an array
- Patented ruggedized Intelligent Energy Controller; integrated MPPT + DC Boost
- Module mounted IEC harvests 10 to 20% more peak solar power from PV Array
- Output DC options for LEECH Modules charging Battery Banks from 14V to 400V
- Daisy Chain of LEECH Parallel Array for more power saves time & junction boxes
- Thousands of LEECH modules in parallel increases output to thousands of watts
- Combiner Box with built-in DC Energy Meter for easy Solar Energy measurement
- Needs no matching modules as is essential for currently used series strings array
- Avoids huge energy loss due to shadow in series strings used in normal arrays
- Avoids conduction losses due to very low line currents and fewer junction boxes
- Increases energy yield by 10 to 20% reduces the solar energy cost per kWh
- Environmentally designed to endure outdoor use at temp from -40°C to $+80^{\circ}\text{C}$

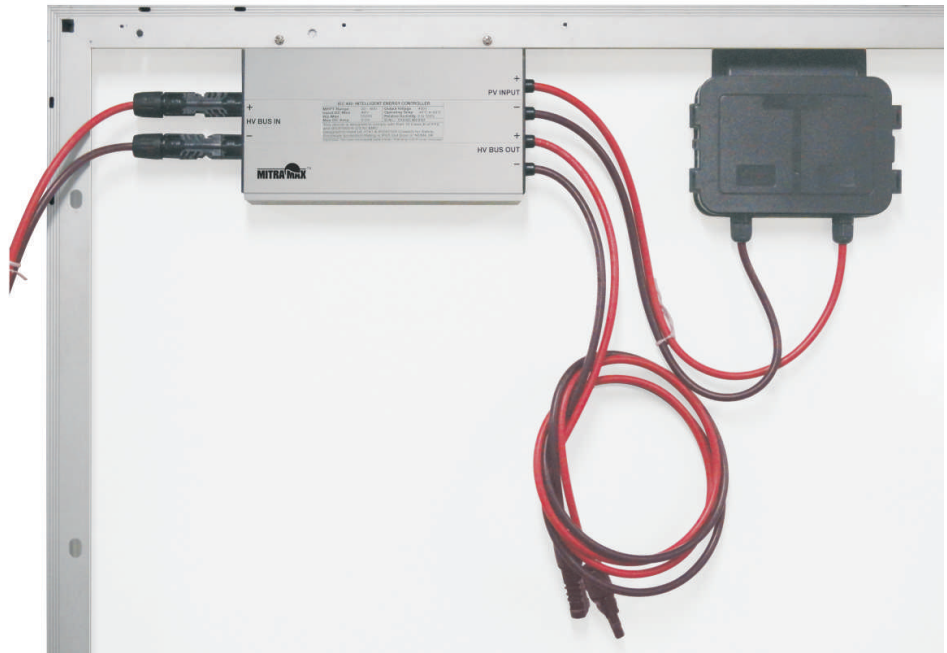
High Return on Investment with LEECH Modules:

All Parallel Array of High Voltage LEECH PV Modules help investors to harvest 15 to 25% more power from the Solar Plant giving equivalent increase in the Return on Investment, ROI. Seen in another way, use of LEECH Modules reduce the cost of power by 10 to 20%

A Sectional View: 250Wp LEECH HV PV Module

Internationally accepted benefits of in-module energy processing:

In-Module energy processing is now a globally common solution. Many venture funded international companies in US and Israel today market such Energy Maximisers for PV Modules. Factory integration of Mitramax IEC ensures comprehensive testing and ready-to-use LEECH HV PV Modules makes Array installer save time and field work. Factory integrated *High Voltage LEECH PV Modules* offer a ready to use, solution to the installers to directly hook the array to battery powered off-grid inverters. LEECH Array saves the user cost of buying expensive Solar Current Regulators. Besides one can use more efficient Solar Inverters that do not need any built-in MPPT topology



Technical Specifications

POWER RATING	
LEECH Module Power Ratings	From 170Wp to 300Wp
Output Voltage Limit for peak output power	14V to 400V DC
MPPT	'Accurate Track' Algorithm
Maximum Output Current	Matches Peak power at battery voltage
Reverse Polarity Protection	Yes
Peak DC/DC Energy Efficiency	97.5%
Night time power conversion	0 watt
OUTPUT VOLTAGE OPTIONS	
Voltage Limit Levels to suit Battery Banks	13.6, 27.2, 54.4, 108.8.V, 217.6 & 408
ENVIRONMENTAL	
Operating Temperature Range	-40°C to +80°C
Relative Humidity	0 – 100%
FIRE AND SURGE PROTECTION	
Temp >80°C switches module output off	Output disconnected >80°C case
Surge Protection	Surge suppressor >450V
COMPLIANCE	
EMC	FCC Part 15 Class B, IEC 61000-6-2, IEC 61000-6-3
Safety	Meets UL 1741, IEC 62103 (class 2),
Protection Rating	IP68 Outdoor use, NEMA 3R
Material	Aluminum – UL94
MECHANICAL	
Size	Same as conventional PV Modules of same power rating meeting all current applicable standards
Construction	
Weight	



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