



Solar pumps and controllers



# MEC

## Solar Pump MPPT Controller



# OVERVIEW

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- MEC Solar pump MPPT Drive is a high efficiency controller, Designed & Made in India.
- The Drive is available in the following models\*
- 1HP, 3HP, 5HP drives for pumps using PMSM (Permanent Magnet Synchronous Motor). (DC Motor) designed for Solar application.
- 1HP, 3HP, 5HP drives also available for pumps using Induction motors (AC Motor) designed for Solar application.

\* 3HP and 5HP models under development



## FEATURES & BENEFITS

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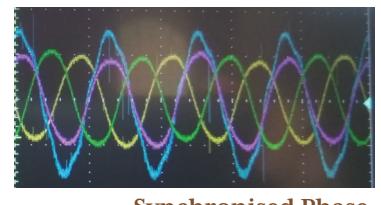
- Easy configuration for a class of motor types.
- Reducing on field installation complexity.
- Better Pump Output Per Available Solar Watts.
- Pump starts earlier in the day and can run even in low Solar power.
- Ability to add more Panels if required.
- Motor drive limits output safely to rating of motor.
- Integrated communication : Modbus over RS485.
- Supports remote monitoring, remote access and control and over-the-air firmware upgrade.
- Extensive protection and monitoring of various parameters of operation.
- Increased reliability, protects motor and drive from catastrophic failures.
- IP65 enclosure.





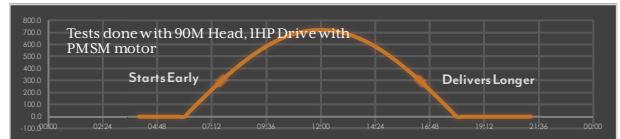
## ADVANCED MOTOR CONTROL

- High efficiency with advanced hybrid Motor control.
- Synchronous Drive control.
- Minimal reactive power consumption resulting in higher efficiency.
- Higher efficiency across the range of Motor speed and Pump Output Head.



Synchronised Phase Current (Blue, Purple)

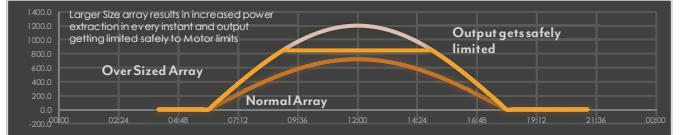
## BETTER PUMP OUTPUT PER AVAILABLE SOLAR WATTS



- Higher efficiency and better MPPT tracking.
- Higher motor RPM possible at a given available Power compared to alternate drives.
- The Pump starts earlier in the day and delivers longer.
- The Drive helps to run motor in cloudy condition.

## OVER SIZING ARRAY WILL NOT AFFECT DRIVE

- Possible to Oversize array if desired.
- MEC Drive will safely limit the output Power as per the Motor's limit.
- Drive Will limit maximum current to the motor as per configured value.





## EXTENSIVE PROTECTIONS PREVENT CATASTROPHIC FAILURES OF THE MOTOR/DRIVE

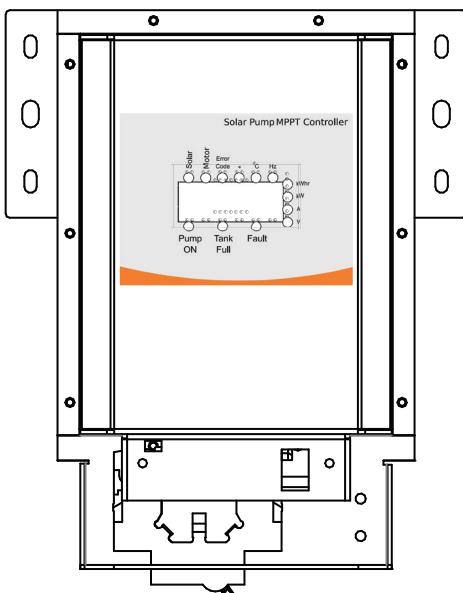
- The drives incorporate Smart protection for higher reliability and long operational life.
- Short Circuit / Inter-Phase fault of Motor.
- Phase Open • PV reverse • PV short
- Dry run detection and stopping of motor.
- Pump clogging and high torque current drawn.
- High temperature auto back off.
- Tank Full sensors connection.



**SMART  
PROTECTION**

## IP65 ENCLOSURE WITH HOUSING FOR RMS AND OTHER ACCESSORIES

- IP65 rated Aluminum enclosure for drive.
- and long operational life.
- No FAN design : No moving parts – Longer life.
- Space for DC MCB and RMS in the enclosure.
- No need for additional enclosure to house various accessories.

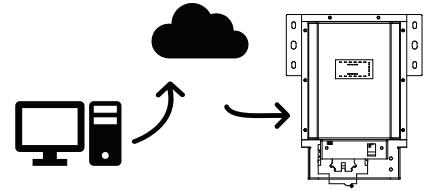


**Room for RMS, MCB etc as a part of the enclosure**



# INTEGRATED COMMUNICATION

- The Drives support Modbus (over RS485).
- Various parameters can be monitored remotely.
- Possible to remotely access and control the device.
- Secure, encrypted Firmware can be delivered to the device for Remote Over-the-air firmware upgrade.



Firmware upgrades remotely delivered safely over-the-air

## SPECIFICATIONS – KEY PARAMETERS (1/2)

	<b>Motor Power</b>	<b>Recommended Solar array</b>	<b>Minimum Input Voltage (DC)</b>	<b>Maximum Input Voltage (DC)</b>	<b>Maximum Output Current per Phase</b>	<b>Output Frequency</b>
	<b>HP</b>	<b>Kwp</b>	<b>V</b>	<b>V</b>	<b>A(rms)</b>	<b>Hz</b>
A	1	0.8 to 1.2	60	200	7.5	Up to 110
B	3	1.8 to 3.5	130	475	7.5	Up to 110
C	5	4.5 to 5.5	130	800	7.5	Up to 110

## SPECIFICATIONS – KEY PARAMETERS (2/2)

1	Type of Motor	PMSM / Induction
2	MPPT efficiency	> 99.9%
3	Output frequency range	20Hz- 110Hz
4	Drive efficiency	> 98% Typ
5	Temperature	Ambient Max 50 Deg C
6	Indication	[1] LED 7 Segment X 5 Display for Motor and Solar parameters like Power, Voltage, Current, Energy, Frequency, Temperature, Time running [2] LEDs to show Pump status (Pump On, Fault, Tank Full)
7	Communication interface	Isolated Two wire communication interface over MODBUS RS485 for RMS/PLC and 5V/2A Power supply for RMS unit
8	Additional Interfaces	Float Switch input
9	Ports	PV +Ve and -Ve , 3 Phase Output
10	Size	260 X 170 X 150 mm
11	Protection Class	IP 65
12	Cooling	Natural Air cooled
13	Solar pump protection functions	Short Circuit / Inter-Phase fault of Motor, Phase Open, PV reverse, PV short, Dry run detection & stopping of motor, Pump clogging & high torque current drawn, High temperature auto back off

# OUR CHANNEL PARTNERS

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