

# Px3000

## Solar Drive Controller



HARNESS THE SOLAR POWER  
TO FUEL YOUR OPERATION WITH  
CLEAN ENERGY



# Px3000 Solar Drive Controller



The continuously rising demand for energy, along with its limited availability and increasing cost, is making a clarion call to end-users to enhance their energy efficiency. AC Drive systems play a vital role in not only reducing energy consumption but also minimizing wear and tear on mechanical equipment.

With over three decades of experience, we have garnered extensive expertise across diverse industries and applications. This wealth of knowledge empowers us to deliver unparalleled Drive solutions tailored to your specific needs.

The use of renewable energy for a sustainable life is the need of the hour. Solar energy is something that nature provides for free, and it is the ideal solution for powering water pumps and farmlands. Additionally, where grid connectivity is either absent or irregular, solar energy is the perfect alternative.

Px3000 from Lauritz Knudsen Electrical & Automation is a Make-in-India solar drive controller and an innovative solution that harnesses solar energy for pumping applications. The Px3000 Solar Drive Controller efficiently utilizes solar energy to operate the pump/motor while providing complete protection to it.

Px3000 is a true power-based MPPT solar drive controller that is suitable for 415V, 3Ø submersible, and surface pumps/motors with power ratings of 5HP, 7.5HP, and 10HP. Its True MPPT technology ensures maximum utilization of solar energy, resulting in maximum water output at different solar energy levels throughout the day.

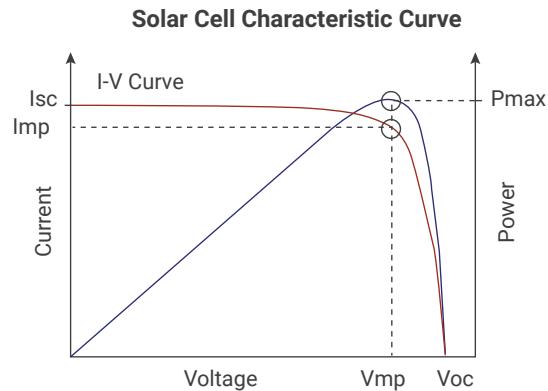
Px3000 is a Plug & Play Drive, making it effortless to commission and reducing complexity, which enhances user-friendliness. It is an all-in-one solution, providing users with the convenience of operating the drive with ease.



## BUILT-IN MPPT

MPPT algorithm enables the generation of maximum output power throughout the day, ensuring higher water discharge.

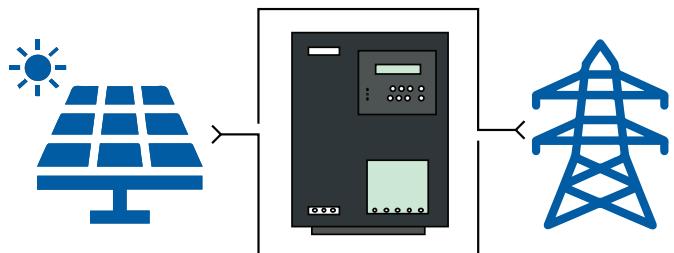
- › True MPPT with efficiency > 99%
- › Auto MPPT feature automatically computes solar parameter values throughout the day
- › Eliminates the need for manual adjustments, hence reducing human errors



## DUAL SUPPLY SOURCE

Px3000 drive is capable of dual mode supply, allowing the use of grid supply - when energy from PV cells is unavailable.

- › Reduces the dependency on grid supply, for places where electricity is unpredictable
- › Easy switching between solar and grid connection



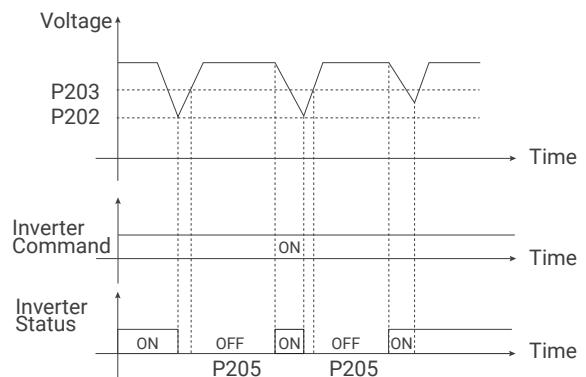
## AUTOMATIC START / STOP

Px3000 facilitates automatic START/STOP based on : Solar irradiance availability, Tank water level and fault condition.

- › No need to operate or reset the drive manually
- › Reduced need for manpower
- › Contributes to energy conservation and time efficiency

UNDER VOLTAGE PROTECTION	CODE	NAME	DEFAULT	RANGE	UNIT
	P202	Trip Set	250	200-550	V
	P203	Trip Reset	350	250-600	V
	P205	Reset Time	180	0-300	Sec

Automatic Start/Stop



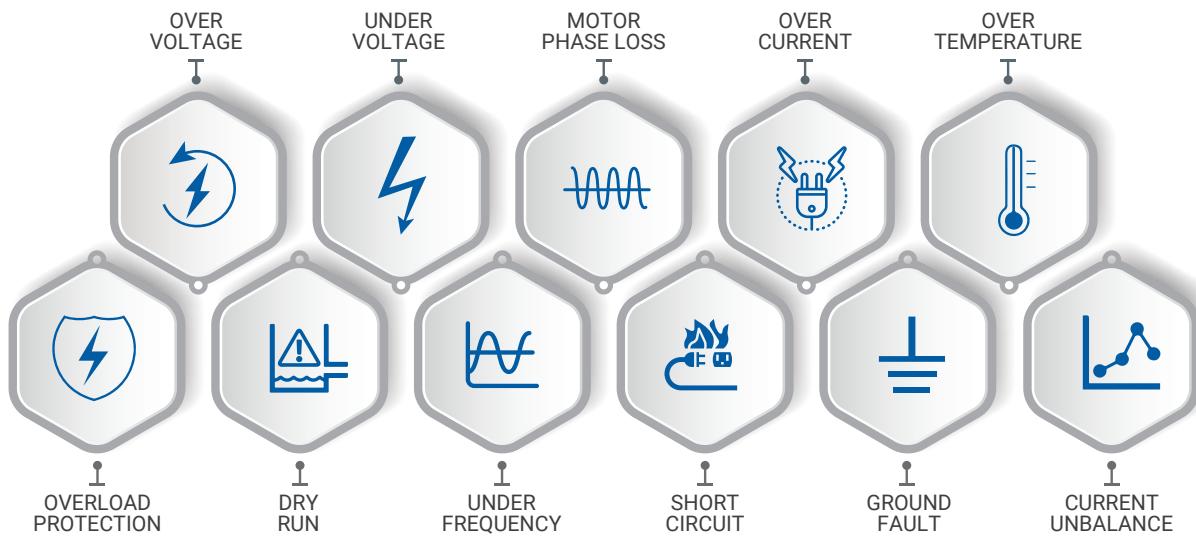
## ROBUST DESIGN

- › Wide operating voltage range:  
**V<sub>mpp</sub> range: 250V - 750V dc**  
**V<sub>oc</sub> range: 300V - 850V dc**
- › All PCBs are conformally coated
- › Best in class performance at ambient temperature upto 50°C without derating



## PROTECTION FUNCTIONS

The in-built protection system facilitates continuous protection for the application - ensuring safety, reliability and minimum maintenance time.

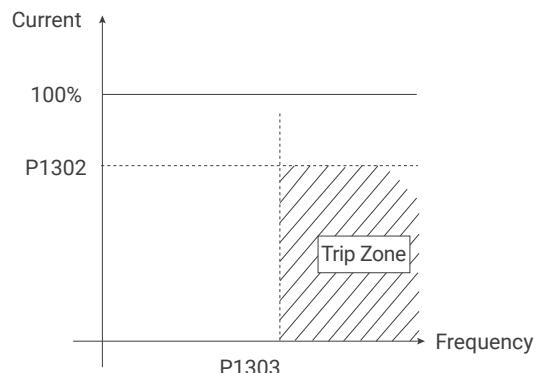


## DRY RUN PROTECTION

Dry Run protection is specifically designed for pump applications

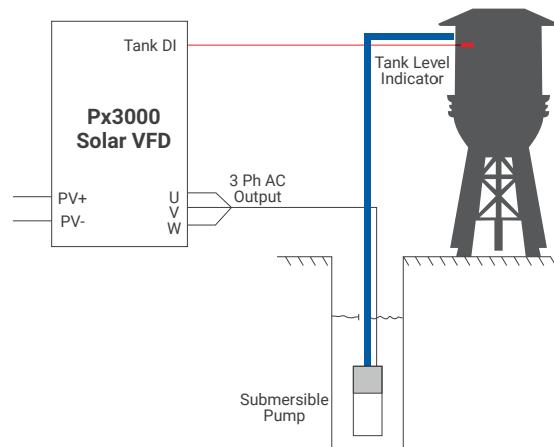
- › It depicts under-load protection
- › Helps in preventing pump damage, when there is insufficient water in the tank

CODE	NAME	DEFAULT	RANGE	UNIT
P1302	Trip Set	60	50-90	%
P1303	Dry Freq	45	10-50	Hz
S308	Motor Amp			A



## WATER LEVEL INTERFACE

- › One of the Digital Inputs in Px3000, is programmed for water level sensing
- › With a float switch, the drive can automatically turn ON & OFF based on the water level in the tank



## BUILT-IN RS485

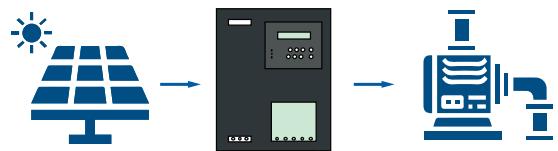
RS-485 enables external communication with RMU through Modbus protocol.

- Monitors and configures drive parameters from remote location
- Reduces the need for frequent site visits for drive operation & maintenance



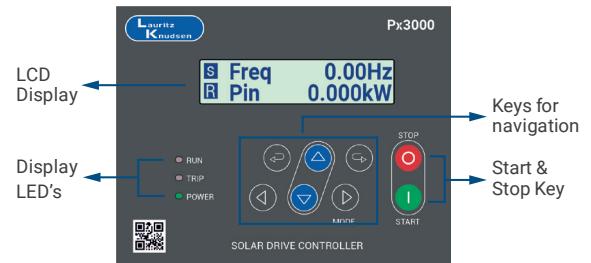
## COMPATIBILITY

- Px3000 is suitable for 415V, 3φ Submersible & Surface pumps
- Compatible with IE2 and IE3 motors
- The solar drive can operate on a wide voltage range of solar panels



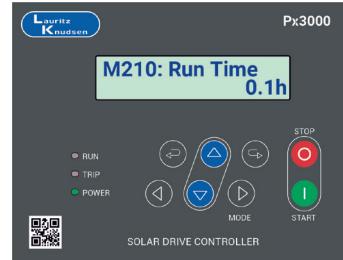
## LCD DISPLAY

- In-built 16x2 LCD display
- Enables easy and simple programming of drive, improving ease of user operation



## RUN-TIME MEASUREMENT

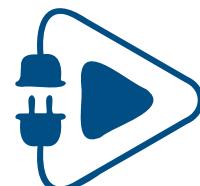
- Px3000 helps in monitoring the operational duration of the drive
- The run-time period is displayed in hours



## USER FRIENDLY

Px3000 is a **Plug & Play** drive. Users can initiate the drive operation, by making the required connections. No additional parameter setting is required, as the drive can operate with default parameters.

- Easy to choose, install & maintain
- Eco-friendly & Economical
- RoHS certified



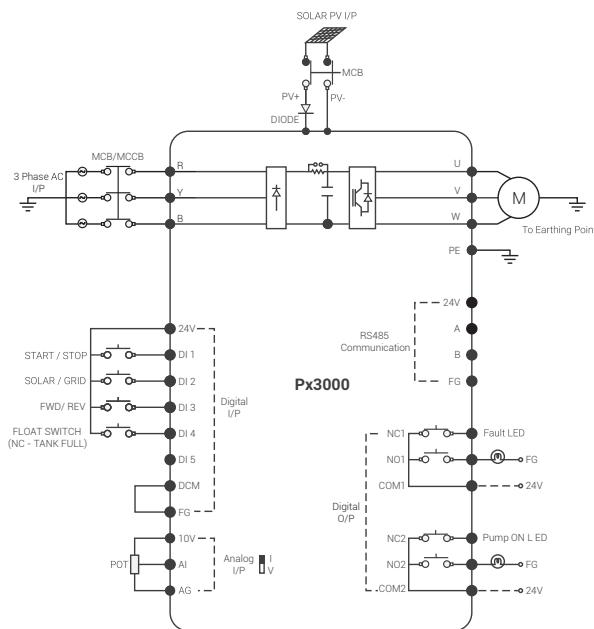
PLUG & PLAY DRIVE



EAVF - P4 □□□□□ BAA		009P5	014P0	018P0			
Applied Motor	HP	5	7.5	10			
	kW	3.7	5.5	7.5			
Rated Current (A)	HD @50° C	9.5A	14A	18A			
	ND @40° C	11A	17A	23A			
Supply Voltage	Grid	380 - 480V, 3-phase, 50/60Hz					
	Solar	300 - 850V DC (Voc)					
MPPT Voltage		250 - 750V DC (Vmp)					
Output Frequency		0 to 50Hz					
Degree of Protection		IP20					
Number of Inputs and Outputs	Digital Inputs - 5						
	Analog Input - 1 (4-20mA / 0-10V)						
	Digital Outputs - 2						
Motor Compatibility		400V class - Three Phase Induction motor					
Control Specifications	Control Method	V/F - Linear, Square					
	Frequency Setting Resolution	Digital command: 0.1Hz ; Analog command: 0.16Hz					
	Overload Capacity	110% of rated current for 60sec					
	Torque Boost	Settable					
	Maximum Output Voltage	0 to Input voltage range					
	Cooling System	Forced air cooling					
Operation Specifications	Operation Mode	Keypad / Terminal / Communication operation					
	Technology	MPPT algorithm with motor speed control					
	Frequency Setting	Analog type: 0-10[V], 0-20[mA] ; Digital type: Keypad					
	Input	Multi - function Terminal	DI 1 - Start / Stop; DI 2 - Solar / Grid; DI 3-Reverse/Forward; DI 4-Tank Full; DI5-Not Used				
		Analog Input	AI- Frequency				
	Output	Multi - function relay terminal	DO1 - Fault ; DO2 - Run Status				
Environment Specifications	Ambient Temperature	-10° C to +50° C					
	Ambient Humidity	95% non-condensing					
	Storage Temperature	- 20° C to +60° C					
	Surrounding Environment	It shall not be exposed to direct sunlight, corrosive air, combustible gas, oil mist, dust and so on.					
	Altitude / Oscillation	Below 1000m, 5.9 / sec <sup>2</sup> (0.6G)					
	Pressure	70 - 106 kPa					
	EMC Filter	Class C3 (Optional)					



## POWER & CONTROL DIAGRAM



\*Recommended Diode specification: 50A/1600V (PIV)

## FUSE AND REACTOR

Drive capacity (kW)	AC Input Fuse - HRC		AC Reactor	
	Current (A)	Voltage (V)	Inductance (mH)	Current (A)
3.7kW	20A	600V	1.22mH	15A
5.5kW	32A	600V	1.12mH	19A
7.5kW	35A	600V	0.78mH	27A

## MCB RATINGS

Pump Rating	Grid		Solar	
	Model	Rating	Model	Rating
5 HP	BB30200C	20A	BB40160B	16A
7.5 HP	BB30250C	25A	BB40200B	20A
10 HP	BB30320C	32A	BB40250B	25A

## MCCB RATINGS

Pump Rating	Drive capacity (kW)	MCCB	
		Model	Rating(A)
5 HP	3.7kW	DM100	25
7.5 HP	5.5kW	DM100	25
10 HP	7.5kW	DM100	30

## PRODUCT DIMENSIONS

Px3000 Solar Drive Controller	Cat. No.	Overall Dimensions			Mounting Dimensions		Weight (kg)
		W (mm)	H (mm)	D (mm)	A (mm)	B (mm)	
5HP	EAVF-P4009P5BAA	166	239	168.5	230	148	3.8
7.5HP	EAVF-P4014P0BAA	166	239	168.5	230	148	3.8
10HP	EAVF-P4018P0BAA	166	239	168.5	230	148	3.8



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