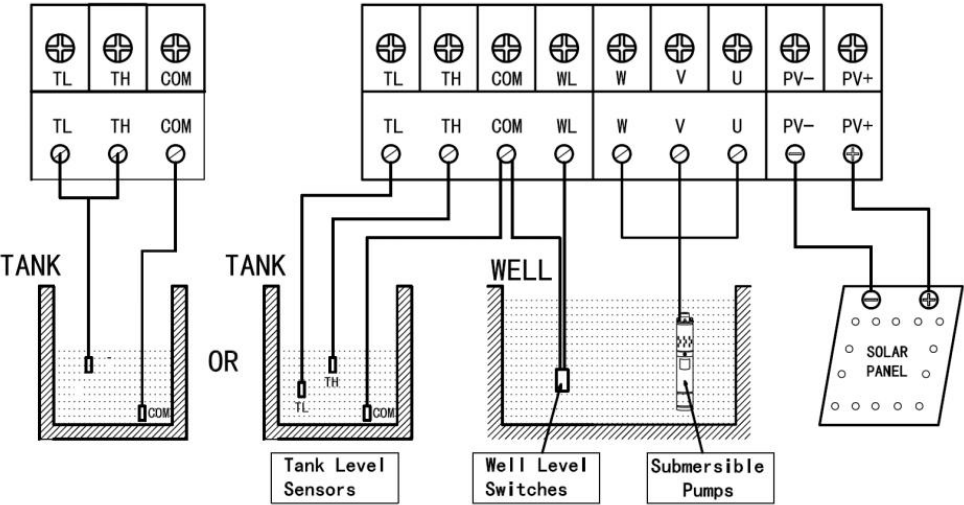


SOLAR POWER PUMP SYSTEM
USER MANUAL

MODEL: JL-197K1500-24V

2.5 Wiring Instructions

2.5.1 Total Diagram of Terminals



TERMINALS

CONNECT WITH

- PV+ PV panel positive
- PV- PV panel negative
- U V W Pump motor U/V/W wires
- TL & TH & COM Tank water level sensor
- WL & COM Well (borehole) water level sensor

Over Temperature Fold back

The JL-197K1500 solar pump controller is designed for full power operation from a solar array in ambient temperatures up to 45°C . In excess of 45°C temperature conditions, the controller will reduce output power in an attempt to avoid shutdown. Full pump output is restored when the controller temperature cools to a safe level.

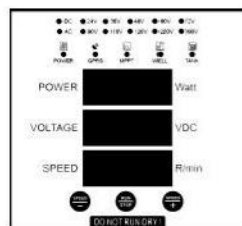
Level Control Switch

The JL-197K1500 solar pump controller can access two water level switches(well level sensor and tank level sensor) to detect remotely and control the pump automatically. Level switch for JL-197K1500 solar pump controller is optional, not mandatory.

2.1 Technical Parameters

ITEM		TECHNICAL PARAMETERS
VOLTAGE	Rated Voltage	24 VDC
	Under Protection Voltage	18 VDC
	Over Protection Voltage	55 VDC
CURRENT	Rated Current	15 A
	Over Protection Current	18 A
	Peak Protection Current	20 A
MCU and Controller Mode		32bit MCU / FOC / Sine Wave Current / MPPT
Shell (Heat Sink)		Stretching Aluminum
Dimension		210mm*170mm*105mm
Weight		2kg
Cooling Mode		Heat dissipation by heat sink and fan
Operating temperature		-10℃ - +80℃(Suggest 0℃ - +60℃)
Storage conditions		-20℃ - +80℃
		5~85%RH(No condensation)

2.2 LABEL DESCRIPTION



ITEM	FUNCTION
● DC ○ 24V ○ 36V ○ 48V ○ 60V ○ 72V ○ AC ○ 90V ● 110V ○ 120V ○ 220V ○ 300V	● Controller Model=Rated Voltage
POWER GPRS MPPT Well TANK	● Power: Light on=Power connected ● GPRS : Flickering =Motor not connected Light on=Motor connected ● MPPT: Light on=MPPT Mode On ● Well: Light on, water level under sensor level ● Tank: Light on, water level reach TH level
SPEED - SPEED +	● Push to Adjust Speed (1 to 5 and MPPT) ● Time setting (0~24h)
RUN/STOP	● Push to RUN or STOP
POWER [Display] Watt	● Display Input Power
VOLTAGE [Display] VDC	● Display Input Voltage
SPEED [Display] R/min	● Display motor speed ● Timing and speed setting page

2.3 PROGRAM SETTING

2.3.1 TIMING SETTING

SETTING PAGE

- ① Directly press together twice to enter the timing setting page.
- ② Press or to adjust the timing .
 ※ ● For example: **03.5h** means the pump will turn off after 3.5 hours.
 ● Timing setting repeats every time after power-off, unless adjust to **00.0h** or **24.0h** to cancel.
 ● Countdown will pause when press STOP bottom.
- ③ Press to confirm, the controller will start working directly.

2.3.2 SPEED SETTING

SETTING PAGE

SPEED [Display] R/min

- ① Directly press or to adjust the speed.
- ② Display speed stage when adjusting the speed.
 Total six speed stages: 01, 02, 03, 04, 05, PP(MPPT mode).
- ③ Display motor speed when stably running.

2.4 LIGHT INDICATION

LIGHT	BEHAVIOURS	CAUSE
 Power	● Light off	① No power input: a. Power line has a break (open circuit) b. PV+ and PV- terminal wrong connected ② Controller power system damaged
 GPRS	● Flickering for long time	① Not enough power input ② Motor phase default a. UVW wires joint non water-proof b. Terminal poor contact ③ Pump cable too long or too thin ④ Motor insulation failure
 MPPT Well Tank	● Flickering together	Inside temperature over 80°C, go to over temperature protection
 Power GPRS MPPT	● Only Power light on, no response after pressing run/stop button	① Power supply under voltage protection ② Power supply over voltage protection
 Well	● Light on	① Water level in well under sensor level ② The controller board is damp
 Tank	● Light on	Water level in tank reach TH level

JL-197K1500 Controller General Information

1 Features

The JL-197K1500 solar pump controller is designed with the high standard of reliability expected of products. The controller attempts to drive the pump and motor to deliver water even under adverse conditions, reducing output as necessary to protect the system components from damage, and only shutting down in extreme cases. Full operation is restored automatically whenever abnormal conditions subside.

Inspection

Before you begin, inspect the JL-197K1500 solar pump controller unit. Verify that the part number is correct and no damage has occurred during transit.

NOTE: JL-197K1500 solar pump controller is the component of solar pumping system which has other two components, PV array and Brushless DC pump.

Protection Features

Electronic monitoring gives the controller the capability to monitor the system and automatically shut down in the event of:

- Dry well conditions – with low level switch
- Bound pump – with auto-reversing torque
- High Voltage Surge
- Low Input Voltage
- Open motor circuit
- Short circuit
- Over heat

NOTE: This controller provides motor overload protection by preventing motor current from exceeding rating current and by limiting the duty cycle in the event of low water level. This controller does not provide over temperature sensing of the motor.

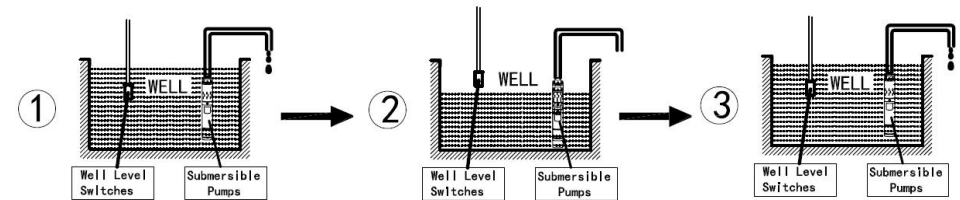
System Diagnostics

The JL-197K1500 solar pump controller continuously monitors system performance and detects a variety of abnormal conditions. In many cases, the controller will compensate as needed to maintain continuous system operation; however, if there is high risk of equipment damage, the controller will protect the system from the fault condition. If possible, the controller will try to restart itself when the fault condition subsides.

Motor Soft-Start

Normally, when there is a demand for water and power is available, the JL-197K1500 solar pump controller will be operating. Whenever the JL-197K1500 solar pump controller detects a need for water, the controller always “ramps up” the motor speed while gradually increasing motor voltage, resulting in a cooler motor and lower start-up current compared to conventional water systems. This will not harm the motor due to the controller’s soft-start feature.

2.5.2 Operation of Well Level Sensor



① Pump runs

WL & COM short circuit

② Pump stops

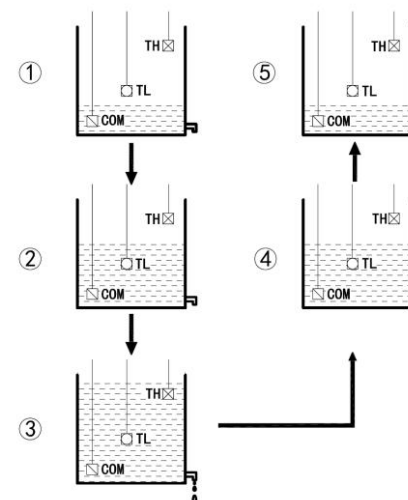
WL & COM open circuit

③ Delay 10-15 min to run

WL & COM from open to short

※ Push RUN/STOP button manually, system restarts immediately.

2.5.3 Operation of Tank Level Sensor



① Pump Runs;

② Pump Keeps Running;

③ Pump Stops;

④ Pump Keeps Stopped;

⑤ Pump Runs again.

Sensor TL and COM is for detecting low water level.
Sensor TH and COM is for detecting high water level.

Using 3 tank level sensors avoids the pump start/stop frequently.

