MEGMEET

MV810G1 (SP1) Series
AC Drive for Solar Pumps
Control Function Instructions

Version: V00

1. Function code related to control

Function code	Description	Range	Default
P30.00	CVT/MPPT mode	0: Stop solar function 1: CVT 2: MPPT	2
P30.01	Initial voltage in MPPT mode (percentage)	0 to 100.0	85.0
P30.02	Power filter time	0 to 10.00	0
P30.03	Bus filter time	0 to 10.00	0
P30.04	Minimum bus voltage allowed for running	0 to 600.0	200.0
P30.05	MPPT step size for upward search	0 to 200	2
P30.06	MPPT step size for downward search	0 to 200	2
P30.11	MPPT power detection refresh time	0 to 65525	0
P30.12	MPPT internal delay time	0 to 65535	50
P30.13	MPPT algorithms	0 to 1	1
P30.14	Vmpp keypad setting	0 to 600.0	537.0
P30.15	Water-level control selection	0: Control through digital input 1: AI1 (the water-level signal is input through AI1) 2: AI2 (the water-level signal is input through AI2)	0
P30.16	Full-water level threshold	0 to 100.0	25.0
P30.17	Empty-water level threshold	0 to 100.0	75.0
P30.18	Full-water level delay	0 to 10000	5
P30.19	Full-water level wake-up delay	0 to 10000	20
P30.20	Empty-water level delay	0 to 10000	5
P30.21	Empty-water level wake-up delay	0 to 10000	20
P30.22	Minimum running frequency	0 to P02.11	10.00
P30.23	Low sunlight intensity delay time	0 to 3600.0	100.0
P30.24	Low sunlight intensity wake-up delay time	0 to 3600.0	300.0
P30.25	PV input and power line frequency input selection	0: Automatic switchover of modes 1: Power line frequency input mode 2: PV input mode	2
P30.26	Time for automatic switchover to PV input	0 to 65535	0
P30.27	Automatic switchover delay	0 to 65535	0
P30.28	Rated pump flow	0 to 6553.5	0
P30.29	Rated pump lift	0 to 6553.5	0
P30.30	Voltage setting at PV undervoltage point	0 to 400.0	200
P30.31	Actual pump flow	0 to 6553.5	0
P30.32	Actual pump lift	0 to 6553.5	0
P30.33	Total pump flow	0 to 65535	0
P30.34	Current at pump underload pre-alarm	0 to 100.0	0
P30.35	Frequency threshold at	0 to 200.00	3.0

Function code	Description	Range	Default
	underload		
P30.36	Underload pre-alarm delay time	0 to 6553.5	60.0
P30.37	Reset time at underload	0 to 6553.5	60.0
P30.38	PV reference voltage	0 to 600.0	0
P30.39	PV actual voltage	0 to 600.0	0
P14.05	Proportional gain Kp1	0 to 1000.0	80.0
P14.06	Integral time Ti1	0.01 to 10.00	1.00
P14.11	PID parameter low-frequency switchover point	0 to P14.12	50.00
P14.12	PID parameter high-frequency switchover point	P14.11 to maximum output frequency	50.00
P14.13	Proportional gain Kp2	0 to 1000.0	80.0
P14.14	Integral time Ti2	0.01 to 10.00	1.00

2. Function description

2.1 CVT/MPPT mode

CVT refers to the constant voltage tracking; the voltage reference is a fixed value set by P30.14. The voltage reference value shall be lower than the PV input voltage; otherwise, the system will run at the frequency lower limit.

MPPT refers to the voltage reference for the maximum power point tracking, which changes constantly till the system reaches a stable state. The regulation speed of MPPT can be adjusted via Kp (P14.05 and P14.13) and Ti (P14.06 and P14.14) of PID. Generally, the step size adjusted via the voltage reference does not require further modification.

2.2 Hibernation/Wake-up at low sunlight intensity

Function code	Description	Range	Default
P30.23	Low sunlight intensity delay time	0 to 3600.0	100.0
P30.24	Low sunlight intensity wake-up delay time	0 to 3600.0	300.0
P30.25	PV input and	0: Automatic	2

Function code	Description	Range	Default
	power line frequency input selection	switchover of modes 1: Power line frequency input mode 2: PV input mode	

When the output frequency is less than or equal to the output frequency lower limit, the delay time count starts. If such state remains throughout the low sunlight intensity delay time, the system will report a low-sunlight-intensity pre-alarm (A-LS) and enters the hibernation state. In a non-continuous situation (the output frequency rises above the lower limit before the delay time is reached), the delay time count will be cleared automatically.

Note:

When the bus voltage is lower than the undervoltage point or the PV voltage is less than 70 V, the system directly reports a low-sunlight-intensity pre-alarm, which means the alarm will be reported without delay. When the PV input and power line frequency input selection (P30.25) is set to 0, the system will automatically switch to the power line frequency input in the low sunlight intensity state.

2.3 Water-level control

Function code	Description	Range	Default
P30.15	Water-level control selection	0: Control through digital input 1: AI1 (the water-level signal is input through AI1) 2: AI2 (the water-level signal is input through AI2)	0
P30.16	Full-water level threshold	0 to 100.0	25.0
P30.17	Empty-water level threshold	0 to 100.0	75.0
P30.18	Full-water level delay	0 to 10000	5
P30.19	Full-water level wake-up delay	0 to 10000	20
P30.20	Empty-water level delay	0 to 10000	5
P30.21	Empty-water level wake-up delay	0 to 10000	20

When the water-level control selection (P30.15) is set to 0, the water-level signal is controlled by the digital input. Refer to the DI function 18 and 19 in Group P09 for detailed information. When the full-water signal input via the terminal is valid, the system will report a full-water pre-alarm (A-tF) after the full-water level delay time (P30.18), and enter the hibernation state. During the full-water alarm, the full-water signal is invalid; the system will clear the full-water alarm after the full-water level wake-up delay time (P30.19), and enter the running state again. When the empty-water signal input via the terminal is valid, the system will report an empty-water pre-alarm (A-tL) after the empty-water level delay time (P30.20), and enter the hibernation state. During the empty-water alarm, the empty-water signal is invalid; the system will clear the empty-water alarm after the empty-water level wake-up delay time (P30.21), and enter the running state again.

When the water-level control selection (P30.15) is set to a value of 1 or 2, the water-level signal is controlled by the analog input. If the detected analog signal of the water-level control is less than the full-water level threshold (P30.16) and remains in such state throughout the full-water level delay time (P30.18), the system will report a full-water pre-alarm and enter the hibernation state. If the detected analog signal rises above the full-water level threshold before the full-water level delay time is reached (defined as a non-continuous situation), the delay time count will be cleared automatically; however, the delay time count will restart once the detected analog signal falls below the threshold again. During the full-water alarm, when the detected analog signal exceeds the full-water level threshold (P30.16), the delay time count starts; if such state remains throughout the full-water level wake-up delay time (P30.19), the system will clear the full-water alarm and recover to the normal running state. In a non-continuous situation, the delay time count will be cleared automatically.

2.4 Power input switchover

Function code	Description	Range	Default
P30.25	PV input and power line frequency input selection	0: Automatic switchover of modes 1: Power line frequency input mode 2: PV input mode	2
P30.26	Time for automatic switchover to PV input	0 to 65535	0

Function code	Description	Range	Default
P30.27	Automatic switchover delay	0 to 65535	0

When the PV input and power line frequency input selection is set to 0, the drive will switch between the power line frequency input and the PV input in an automatic manner, which means the power source of the system will switch between the power grid and the PV automatically. When the system is powered by the power grid, the MPPT function is disabled, and the speed regulation is controlled by the frequency reference (P02.09). When the running time in such state reaches the time for automatic switchover to PV input, the system will automatically switch to the PV input for power supply. When the system is powered by the PV, the MPPT function is enabled, and the system will switch to the power line frequency input in low sunlight intensity state.

2.5 Underload protection

Function code	Description	Range	Default
P30.34	Current at pump underload pre-alarm	0 to 100.0	0
P30.35	Frequency threshold at underload	0 to 200.00	3.0
P30.36	Underload pre-alarm delay time	0 to 6553.5	60.0
P30.37	Reset time at underload	0 to 6553.5	60.0

When the current at pump underload pre-alarm is set to a non-zero value, the underload detection function of the drive will be enabled, with 100.0% corresponding to the rated current of the motor. When the absolute difference between the target frequency and the ramp frequency remains less than or equal to the frequency threshold at underload (P30.35), the system will report an underload pre-alarm (A-LL) after the underload pre-alarm delay time if the present value of the current remains lower than the set value of the current at pump underload pre-alarm. In the underload pre-alarm state, the system will restore after the reset time at underload.

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Warranty Bill

Customer company:	
Detailed address:	
Contact:	Tel:
Option model:	
Option number:	
Purchase date:	
Service unit:	
Contact:	Tel:
Maintenance date:	

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MEGMEET	Checker: _____
Shenzhen Megmeet Electrical Co., Ltd.	Manufacturing date: _____
Certificate	The product has been tested in line with design standards and approved for leaving the factory.