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SPD300 (0.4 ~ 630kW) Solar Pump VFD

DELIXI HANGZHOU INVERTER CO.,LTD.

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Delixi (Hangzhou) Inverter Co., Ltd, a key member of Sino-French joint venture Delixi Electric Co., Ltd.,is a national high-tech enterprise recognized as a "Specialized, Refined, Distinctive, and Innovative SME" in Zhejiang Province. Specializing in the field of industrial automation control, it is a leading domestic supplier of industrial automation products and solutions, integrating R&D, production, sales, and technical services.

Committed to independent innovation, the company has established a comprehensive R&D system equipped with six laboratories and testing zones, including electromagnetic compatibility, environmental reliability, high-precision dynamic performance, and industry-specific machinery. It is designated as a High-tech Enterprise R&D Center in Hangzhou. The company operates a standardized production base and continuously adopts advanced domestic and international technologies as well as state-of-the-art production and testing equipment. Its facilities include multiple automated production lines, an intelligent SMT workshop, and automated conformal coating systems. The company is also ISO9001:2015 certified for international quality management.

With over 20 years of development, the company has built a diverse portfolio of industrial control products, including frequency inverter, servo drive, soft starter, HMI, PLC, and industry-tailored solutions. Its technologies span the information interaction layer, control layer, drive layer, and execution layer. Having accumulated comprehensive solutions across industries such as machine tools, textiles, packaging, printing, woodworking, logistics, and food processing, the company significantly enhances its customers' automation and production efficiency.

To better serve its clients, the company has established a systematic nationwide sales and service network with branch offices and technical service centers in key cities. It also actively expands into emerging international markets, continually improving its global sales network through overseas offices that integrate marketing and service. Products are now exported to regions including Southeast Asia, Central Asia, the Middle East, South America, and Africa, with export volume growing rapidly year by year.

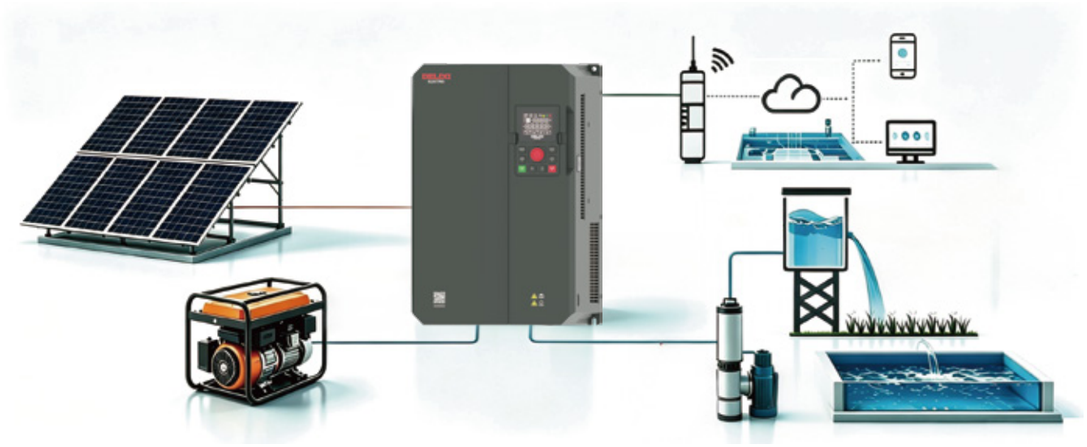


"Crafted with Integrity, Driving the Future." Upholding the core values of "Customer First, Collaboration, Agility, Innovation, and Excellence," Delixi (Hangzhou) Inverter Co., Ltd remains dedicated to continuous innovation, earning the trust of its customers through high-quality products and exceptional service.

SPD300 Series Solar Pump VFD

SPD300 is an inverter specially designed for solar-powered water pump systems, which can supply clean water for remote areas lacking power infrastructure.

This product converts direct current output from photovoltaic arrays into alternating current to drive various types of water pumps. Equipped with a high-precision fast MPPT algorithm, it tracks the maximum power point of photovoltaic modules in real time to maximize the driving performance of pump motors. In addition, SPD300 also supports AC input from the power grid or generators. When solar power generation is insufficient, mains power or generator power can be connected to achieve all-day operation and meet diverse water-supply requirements.



Main Features

- Developed on Delixi Electric’s new generation technology platform
- supports asynchronous /synchronous/single-phase motors and AC/DC hybrid input
- efficient MPPT algorithm and stable frequency output
- powerful background analysis software and remote monitoring platform
- adopts a Type-C interface, enabling firmware upgrade without main power supply or equipment disassembly

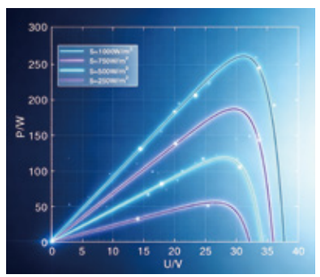
Super Computing Power ,Ultra-fast Response

Built-in high-frequency dual-core high-end chip greatly improves system computing speed and provides robust computing support for stable equipment operation under complex working conditions.



Intelligent Tracking , Ultimate Efficiency

The optimized MPPT algorithm works with high-bandwidth PI control loops to sensitively capture every change in light intensity, ensuring more stable output frequency. Its energy conversion efficiency reaches up to 99.5% for maximum solar energy utilization.



Full Compatibility ,Multi-purpose Unit

Seamlessly compatible with asynchronous motors and permanent-magnet synchronous motors without replacing the main control unit. It perfectly meets the demands of different water pumps and greatly reduces equipment replacement and modification costs.



Intelligent Hybrid Input , Reliable Safety Assurance

Supports AC/DC hybrid input mode. It intelligently identifies grid status and automatically switches operation logic. Real-time monitoring and early warning are available for abnormalities such as grid unbalance and voltage fluctuation. Multiple safety protections are established to guarantee round-the-clock stable operation of equipment and water-supply systems.



Professional Protection,Plug-and-Play

Integrates multiple exclusive protection functions for solar water pumps and supports user-defined PQ curves. It is equipped with an automatic pump cleaning function. Based on years of industry application experience, factory default parameters are pre-configured. Users can operate it directly without parameter configuration.

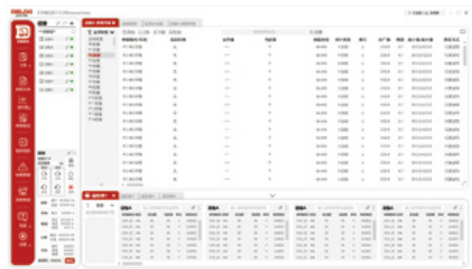


Remote Control,Data Monitoring

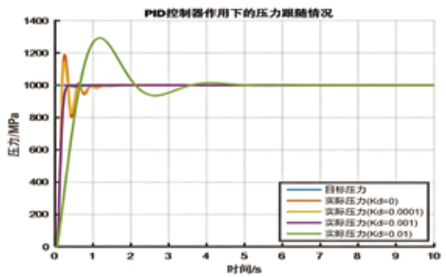
Relying on the powerful cloud processing platform, it realizes remote drive control, parameter modification, fault query, as well as historical data storage and analysis.



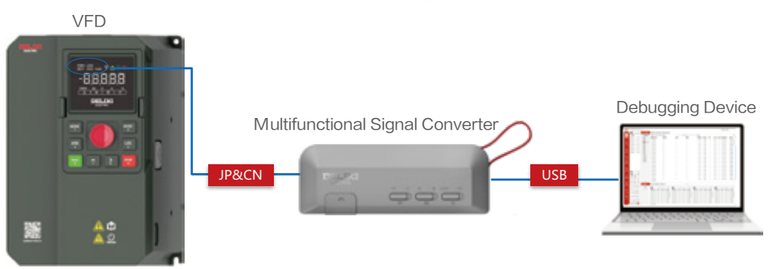
Brand-new background software supporting parameter reading & writing, search, comparison, upload & download, and oscilloscope functions.



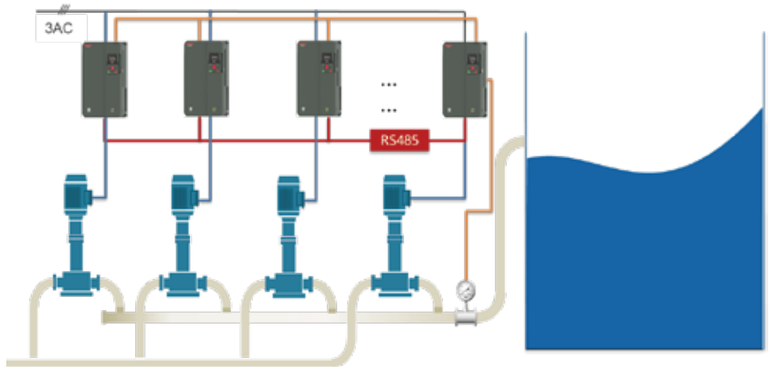
Constant-pressure water pump regulation, adjusting rotating speed to dynamically match water consumption demand.



Adopts Type-C interface for firmware upgrade without main power supply or equipment disassembly. It can also serve as a multi-function signal converter and commissioning device.



Multiple inverters can be networked for linkage to schedule several pumps cooperatively and realize intelligent control of large-scale water-supply systems.





Nameplate and Model

DELIXI
ELECTRIC

Model: SPD300G18R5T4HL
Input: DC 250-900V
AC 3PH 380V-480V 344A 50/60Hz
Output :0-320Hz 340A 185kW
HW : 1.1.00 SW : 1.1.2
SN : SPD300G18R5HL26A00001

DELIXI HANGZHOU INVERTER CO.,LTD.



SPD300 G18R5 T4 H L E

① ② ③ ④ ⑤ ⑥

SN	Field	Description	
①	Product series Number	**SPD300 :** Photovoltaic Water Pump Dedicated Model	
②	Product type and power	**G:** Universal Type **18R5:** Indicates the adapted motor power is 18.5kW	
③	AC Input Voltage	**T4:** Three-Phase 380V~480VAC,50/60Hz	
④	DC Input Voltage	**H:** 250~900VDC	
⑤	Reactor	**Blank:** none	**L:** Built-in DC reactor
⑥	Keyboard Configuration	**Blank:** HLED00NNKN300S (LED, with potentiometer,single display)	**D:** No keyboard
		E: HLED00NNKN300D (LED, with potentiometer,dual display)	**H:** HLCD00RNNN300 (LCD, with RTC, Chinese)
		I: HLCD01RNNN300 (LCD, with RTC, English)	

*Note:
Three-phase 380V~480V: SIZE 1~SIZE 9 (0.4~160kW) do not support DC reactors, while SIZE 10 (185kW) and above models come standard with a DC reactor

Application area



Agricultural irrigation



Desertification control



Grassland animal husbandry



Domestic water supply



Urban water use



Landscape fountains

Product Selection (0.4~630kW)

Type	Appearance structure	Power range	Power capacity (kVA)	Input current (A)	Output current (A)	Adapt motor (kW)	DC reactor
Rated Voltage: Three-phase 380V~480VAC,50/60Hz							
SPD300G0R4T4H	SIZE 1	0.4 ~ 3.0kW	2	2.2	1.6	0.4	
SPD300G0R75T4H			3.5	4.4	3	0.75	/
SPD300G1R1T4H			4.1	5	3.5	1.1	
SPD300G1R5T4H			5	6	4.5	1.5	
SPD300G2R2T4H			6.7	6.8	6	2.2	
SPD300G3R0T4H			9.5	9	7.5	3	
SPD300G4R0T4H	SIZE 2	4.0 ~ 5.5kW	12	11	9.5	4	
SPD300G5R5T4H			17.5	15.5	13	5.5	
SPD300G7R5T4H	SIZE 3	7.5 ~ 11kW	22.8	20.5	17	7.5	
SPD300G11T4H			33.4	26	25	11	
SPD300G15T4H	SIZE 4	15kW	42.8	35	32	15	
SPD300G18R5T4H	SIZE 5	18.5 ~ 22kW	33	38.5	37	18.5	
SPD300G22T4H			39	46.5	45	22	
SPD300G30T4H	SIZE 6	30 ~ 37kW	52	62	60	30	
SPD300G37T4H			63	76	75	37	
SPD300G45T4H	SIZE 7	45 ~ 55kW	81	92	90	45	
SPD300G55T4H			97	113	110	55	
SPD300G65T4H	SIZE 8	65 ~ 110kW	110	134	130	65	
SPD300G75T4H			127	157	152	75	
SPD300G90T4H			150	180	176	90	
SPD300G110T4H			180	214	210	110	
SPD300G132T4H	SIZE 9	132 ~ 160kW	220	256	253	132	
SPD300G160T4H			263	305	300	160	
SPD300G185T4HL	SIZE 10	185 ~ 220kW	278	344	340	185	standard configuration
SPD300G200T4HL			334	383	380	200	
SPD300G220T4HL			375	425	420	220	
SPD300G250T4HL	SIZE 11	250 ~ 315kW	404	484	480	250	
SPD300G280T4HL			453	543	540	280	
SPD300G315T4HL			517	605	600	315	
SPD300G355T4HL	SIZE 12	355 ~ 450kW	565	683	680	355	
SPD300G375T4HL			596	714	710	375	
SPD300G400T4HL			629	753	750	400	
SPD300G450T4HL			715.5	864	860	450	
SPD300G500T4HL	SIZE 13	500 ~ 630kW	756	905	900	500	
SPD300G560T4HL			860	1023	1020	560	
SPD300G630T4HL			939	1124	1120	630	

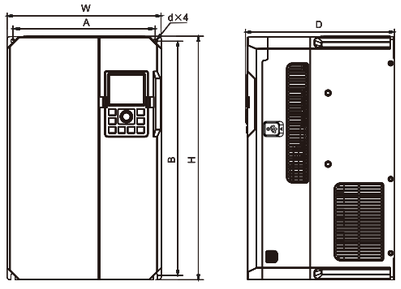
Technical specifications

Control performance	Type of drivable motors		Asynchronous Induction Motor (IM), Permanent Magnet Synchronous Motor (PMSM)
	Control mode		Open-Loop Vector Control (SVC) , V/F Control
	Overload Capacity		150% rated current for 60s
	Asynchronous Motor VF	Supported functions	Overvoltage suppression, overcurrent suppression, momentary power loss ride-through, oscillation suppression, torque boost, slip compensation, multiple V/F curve selections, V/F separation, DC braking, random PWM, over-excitation quick deceleration, droop control, parameter auto-tuning, speed tracking, etc.
	Asynchronous Motor SVC	Supported Functions	Master-Slave Control, Overvoltage Suppression, DC Braking, Torque Control, Momentary Power Loss Ride-Through, Parameter Auto-Tuning, Speed Tracking, etc.
		Speed Regulation Range	1:250 (SVC)
		Starting torque	0.25Hz/150% (SVC)
		Torque Step Response	Torque step response within 2 ms
		Torque Control Accuracy	Torque control accuracy ±3% above 5Hz
		Speed regulation accuracy	Within 10% of rated slip
		Field weakening ratio	5x flux-weakening
	Synchronous Motor SVC	Supported Functions	Master-Slave Control, Overvoltage Suppression, DC Braking, Torque Control, Momentary Power Loss Ride-Through, Parameter Auto-Tuning, Speed Tracking, etc.
		Speed Regulation Range	1:100 (SVC)
		Starting torque	0.5Hz/150% (SVC)
		Torque Step Response	Torque step response within 2 ms
		Torque Control Accuracy	Torque control accuracy ±3% above 5Hz
		Speed regulation accuracy	0.05%
Basic functions	Command channel		Controls motor start/stop operations, including DI/DO, virtual DI/DO, and external expansion card DI/DO. Supports switching between 4 sets of motor parameters/control parameters, and allows free programming for configuring start/stop commands.
	Given channel	Input frequency resolution	Digital setting: 0.01 Hz Analog setting: Maximum frequency × 0.1%
		Given velocity/torque	Acceleration/deceleration curves, dynamic switching of multiple acceleration/deceleration times, acceleration/deceleration S-curves, external PID reference, AI (2 channels, supporting 0-10V, 0~20mA), communication reference for speed and torque, pulse reference (HDI1), multi-step reference, etc., supporting free programming for setting speed/torque reference
	Communication mode		Support 7 communication modes:Modbus（Modbus-RTU、Modbus-TCP）、Profibus-DP、CAN、CANopen、Profinet、EtherCAT、4G-LTE
	Output limitation		Support torque limitation, power limitation, current limitation, limit torque limitation, velocity limitation and frequency hopping
	Process control	PID	Free configuration of sleep, given and feedback source, switching of 2-segment PID parameters, feedback loss detection, free configuration of output limitation, free initialization configuration
	Protection		Frequency converter motor protection, including overvoltage, overcurrent, overload, motor overheating, load shedding protection, fault auto-reset, auto-restart, etc.
	Special aircraft protection features		Dry/wet water protection, low-frequency protection, sleep mode protection, customizable overcurrent protection, input three-phase imbalance protection, and automatic frequency reduction for overheating protection.
Personalized function	Free programming		Realize free programming. logic operations (AND/OR/NOT, XOR/XNOR),arithmetic operations (addition/subtraction/multiplication/division, absolute value, numerical comparison), logic delay on/off, multi-point curve, constant value
	Self-detection		nverter and motor detection. Support detection of IGBT straight connection, short circuit to ground, phase loss self-detection, encoder self-detection, inter-phase short circuit self-detection
	background software		Background software DHI.DriveSoft supports parameter upload/download and oscilloscope function of inverter. Support remote debugging and fault diagnosis through background software. Monitor internal status of the Product through oscilloscope
Running	Operation Command		Command sources: Operator panel, control terminals, Communication Command (switchable via multiple methods).
	Frequency instruction		14 frequency instructions: Given by figure, given by analog voltage, given by analog current, given by pulse, given by serial port (switched through different modes)
	Auxiliary frequency instruction		14 auxiliary frequency instructions. Flexibly realize fine tuning and synthesis of auxiliary frequency.
	Input terminal		Standard:4 DI terminals, 1 HDI terminal。2 AI terminals. AI1 supports only 0-10V voltage mode input. AI2 supports both 0-10V voltage mode input and 0-20mA current mode input
	Output terminal		Standard:1 AO terminal, supporting 0-20mA current output or 0-10V voltage output . 1 relay output terminal
Display and keyboard Operation	LED Control Panel Display		Displays and allows modification of parameters, while showing operational statuses of the Variable Frequency Drive (Forward/Reverse/Stop, Panel/Terminal/Communication Control, Speed/Torque Control, etc.)
	Key Lock and Function Selection		Enables partial key locking and defines functional boundaries for specific keys to prevent accidental operations
Environment	Application scenario		Indoor, free from direct sunlight, dust, corrosive gas, flammable gas, oil mist, water vapor, dropping water or salt, etc.
	Altitude		No derating below altitude of 1,000m; derated by 1% when height increases by 100m above the altitude of 1,000m; the max. service altitude is 3,000m. Please contact the manufacturer when altitude exceeds 3,000m
	Ambient temperature		-20°C ~ +50°C, have derated use when the ambient temperature is 40~50°C; derated by 1.5% when the ambient temperature increases by 1°C.
	Humidity		Below 95%RH, no condensation.
	Vibration		Less than 5.9 m/s² (0.6g)
	Storage temperature		- 40℃~ + 65℃

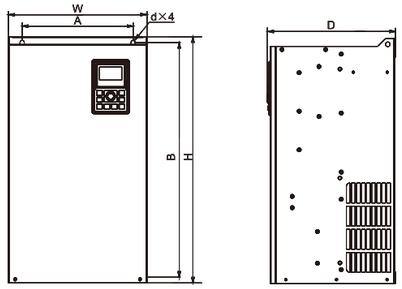
Appearance and installation dimensions

(Unit: mm)

SIZE 1 ~ SIZE 6

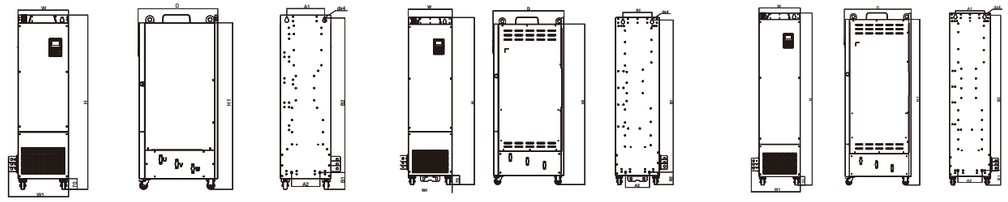


SIZE 7 ~ SIZE 9



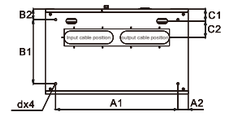
Appearance structure	Power range	Mounting hole (mm)		Outline dimensions (mm)			Installation hole diameter (mm)
	(kW)	A	B	H	W	D	d×4
SIZE1	0.4 ~ 3.0	119	194	205	130	160	Ø5
SIZE2	4.0 ~ 5.5	119	194	205	130	170	Ø5
SIZE3	7.5 ~ 11	144	244	254	155	181.5	Ø5.5
SIZE4	15	182	275	285	192	181.5	Ø5.5
SIZE5	18.5 ~ 22	198	338	350	210	210	Ø5.5
SIZE6	30 ~37	240	395	410	260	248	Ø7
SIZE7	45 ~ 55	240	520	540	300	277	Ø9
SIZE8	65 ~110	270	560	580	340	314.5	Ø10
SIZE9	132 ~ 160	300	890	915	400	323.5	Ø10

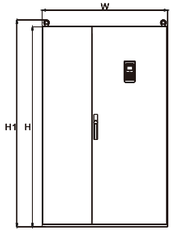
SIZE 10 SIZE 11 SIZE 12

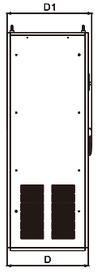


Appearance structure	Power range	Mounting hole (mm)				Outline dimensions (mm)					Installation hole diameter (mm)
	(kW)	A1	A2	B1	B2	H	H1	W	W1	D	d×4
SIZE10	185 ~220	246.5	180	1016	110	1145	1094	320	380.5	505	Ø13
SIZE11	250 ~315	225	185	1175	98	1292	1241.5	340	400	550	Ø13
SIZE12	355 ~450	240	200	1276.5	121.5	1417	1364.5	340	403	550	Ø15.5

SIZE13







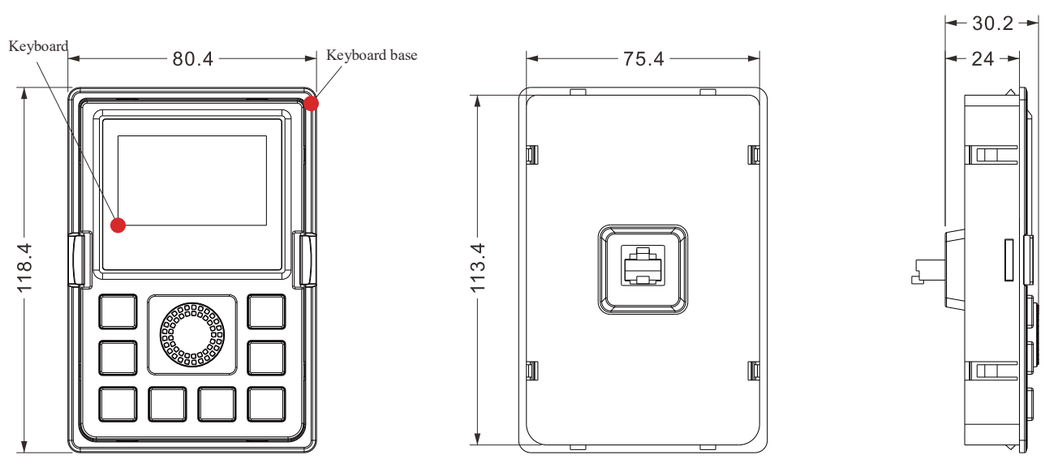
Appearance structure	Power range (kW)	Mounting hole (mm)					
		A1	A2	B1	B2	C1	C2
SIZE13	500 ~630	860	72	450	73.7	83.7	115
		Outline dimensions (mm)					Installation hole
		H	H1	W	D	D1	d×4
		1603	1656	1004	596	621.3	Ø15

Control class extension options

Name		Model	Description
Braking Unit	External Braking Unit		External Braking Component
Mounting Accessory	Embedded Mounting Bracket		For embedded installation
Expansion Cards	I/O Expansion Card	DHEEIO1	4 DI + 1 AI + 1 DO and 1 relay output + CAN + RS485 (Applicable to 15KW and above models)
		DHEEIO2	3 DI
		DHEEIO3	3-ch DI + 1-ch Relay + RS485
		DHEEIO4	3-ch DI + 1-ch DO + 1-ch Relay Output
		DHEEIO5A	4-ch DI + 2-ch DO + RS485
		DHEEIO5B	4-ch DI + 2-ch DO
		DHEEIO6	1-ch AI (supports differential voltage input and temperature sensing resistor input)
		DHEEIO7	1-ch AI (supports -10V DC to 10V DC input)
Communication Card	RS485 Communication Card	DHEE485	RS485 Communication Card (MODBUS-RTU)
	CAN Communication Card	DHEECAN	CAN Communication Card
	CANopen Communication Card	DHEECANOPEN	CANopen Communication Card
	PROFIBUS-DP Communication Card	DHEEDP	PROFIBUS-DP Communication Card
	PROFINET Communication Card	DHEEPN	PROFINET Communication Card
	EtherCAT Communication Card	DHEEECAT	EtherCAT Communication Card
	MODBUS TCP Communication Card	DHEETCP	MODBUS TCP Communication Card
	4G Communication Card	DHEE4G	4G Communication Card

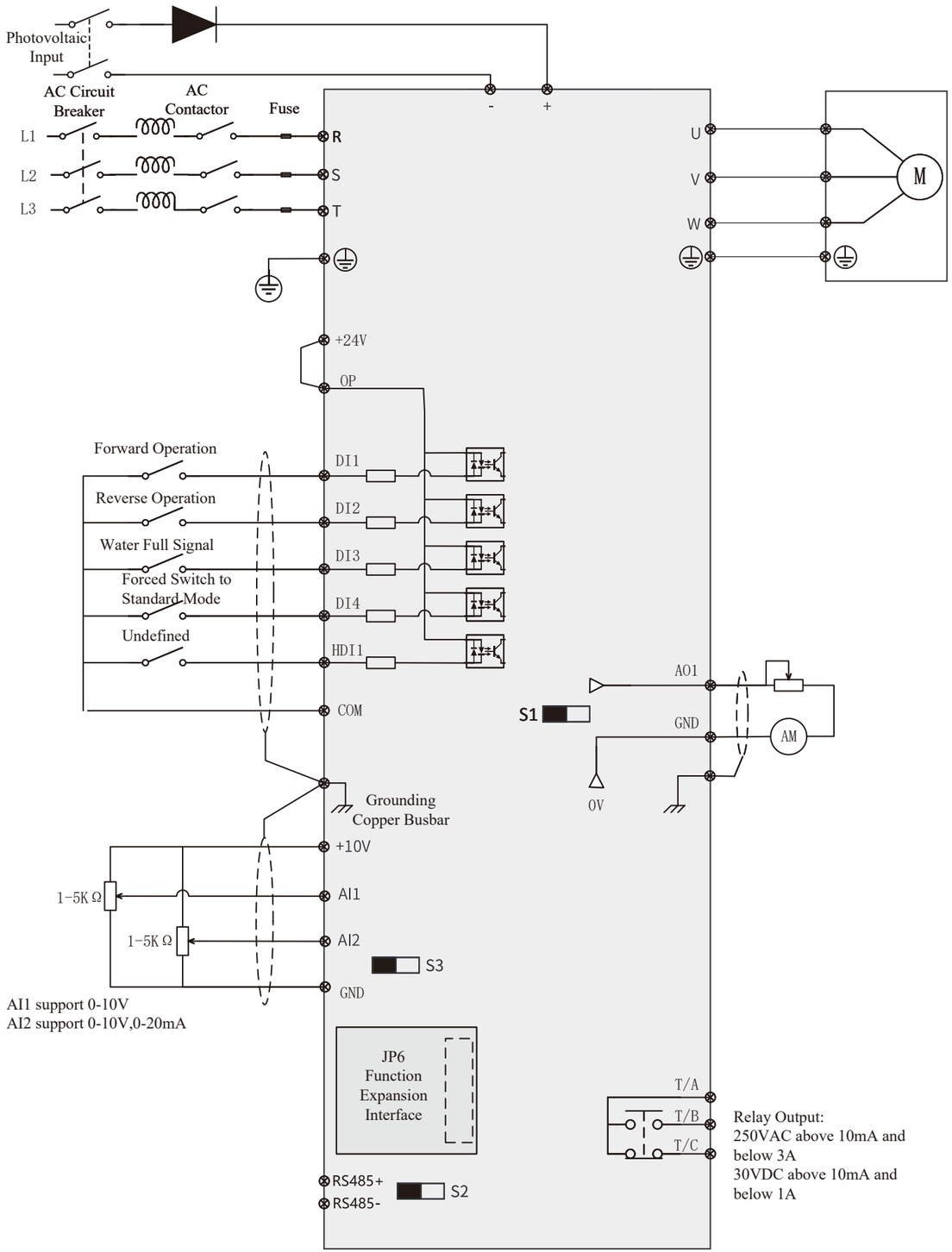
External operation keypad

(Unit: mm)



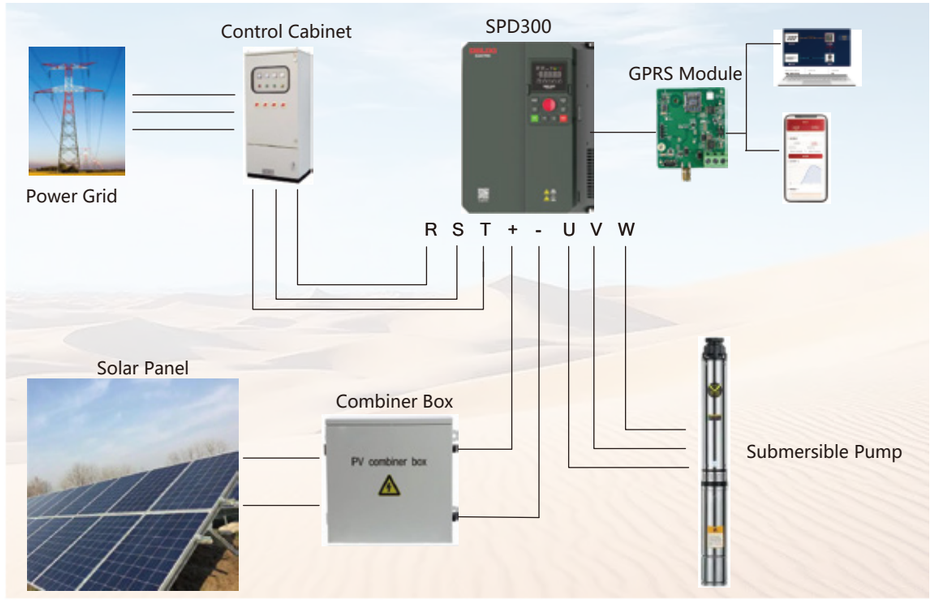
Base mounting dimensions:75.4*113.4mm

Electrical wiring diagram



System Connection Diagram

In a control system where a frequency converter controls the motor, it is necessary to install various electrical devices at both the input and output terminals of the converter to guarantee safe and reliable system operation.



Low-Voltage Electrical Specification Table

Model	AC Circuit Breaker (A)	DC Circuit Breaker	AC Contactor (A)	Surge Protective Device	Fuse
SPD300G0R75T4H	10	16A/1000VDC	12	TypeⅡ 1000VDC	30 A Fast Fuse
SPD300G1R5T4H	10		12		
SPD300G2R2T4H	10		12		
SPD300G4R0T4H	25		25		
SPD300G5R5T4H	25	25A/1000VDC	25		
SPD300G7R5T4H	40		40		
SPD300G11T4H	50	63A/1000VDC	50		
SPD300G15T4H	63		63		
SPD300G18R5T4H	63	100A/1000VDC	63		
SPD300G22T4H	100		95		
SPD300G30T4H	100		95		
SPD300G37T4H	125	125A/1000VDC	115		
SPD300G45T4H	200	160A/1000VDC	170		
SPD300G55T4H	200	250A/1000VDC	170		
SPD300G75T4H	250		205		
SPD300G90T4H	315	350A/1000VDC	245		
SPD300G110T4H	350		265		
SPD300G132T4H	350	400A/1000VDC	330		
SPD300G160T4H	400	550A/1000VDC	400		
SPD300G185T4HL	500		500		

Model	AC Circuit Breaker (A)	DC Circuit Breaker	AC Contactor (A)	Surge Protective Device	Fuse
SPD300G200T4HL	500	600A/1000VDC	500	TypeⅡ 1000VDC	30 A Fast Fuse
SPD300G220T4HL	630	630A/1000VDC	630		
SPD300G250T4HL	630		630		
SPD300G280T4HL	800	800A/1000VDC	800		
SPD300G315T4HL	800		800		
SPD300G355T4HL	1000	1000A/1000VDC	1000		
SPD300G375T4HL	1000		1000		
SPD300G450T4HL	1250	1250A/1000VDC	1250		
SPD300G500T4HL	1600	1600A/1000VDC	1600		
SPD300G560T4HL	1600	1600A/1000VDC	1600		
SPD300G630T4HL	2000	2000A/1000VDC	2000		

Recommended Solar Panel Configuration

Model	Solar Panel Open-Circuit Voltage Rating			
	37V±1V		45V±1V	
	Panel Power ±5Wp	Number of Panels per String * Number of Strings	Panel Power ±5Wp	Number of Panels per String * Number of Strings
SPD300G0R75T4H	250	18*1	300	15*1
SPD300G1R5T4H	250	18*1	300	15*1
SPD300G2R2T4H	250	18*1	300	15*1
SPD300G4R0T4H	250	18*2	300	15*2
SPD300G5R5T4H	250	18*2	300	15*2
SPD300G7R5T4H	250	18*2	300	15*2
SPD300G11T4H	250	18*3	300	15*3
SPD300G15T4H	250	18*4	300	15*4
SPD300G18R5T4H	250	18*5	300	15*5
SPD300G22T4H	250	18*6	300	15*6
SPD300G30T4H	250	18*8	300	15*8
SPD300G37T4H	250	18*10	300	15*10
SPD300G45T4H	250	18*12	300	15*12
SPD300G55T4H	250	18*15	300	15*15
SPD300G75T4H	250	18*20	300	15*20
SPD300G90T4H	250	18*25	300	15*25
SPD300G110T4H	250	18*30	300	15*30
SPD300G132T4H	250	18*36	300	15*36
SPD300G160T4H	250	18*43	300	15*43
SPD300G185T4HL	250	18*50	300	15*50
SPD300G200T4HL	250	18*55	300	15*55
SPD300G220T4HL	250	18*60	300	15*60
SPD300G250T4HL	250	18*67	300	15*67
SPD300G280T4HL	250	18*75	300	15*75
SPD300G315T4HL	250	18*84	300	15*84
SPD300G355T4HL	250	18*94	300	15*94
SPD300G375T4HL	250	18*100	300	15*100
SPD300G450T4HL	250	18*107	300	15*107
SPD300G500T4HL	250	18*119	300	15*119
SPD300G560T4HL	250	18*133	300	15*133
SPD300G630T4HL	250	18*149	300	15*149

Notes