Industrial Motors

Commercial & Aplliance Motors

Automation

Digital & Systems

Energy

Transmission & Distribution

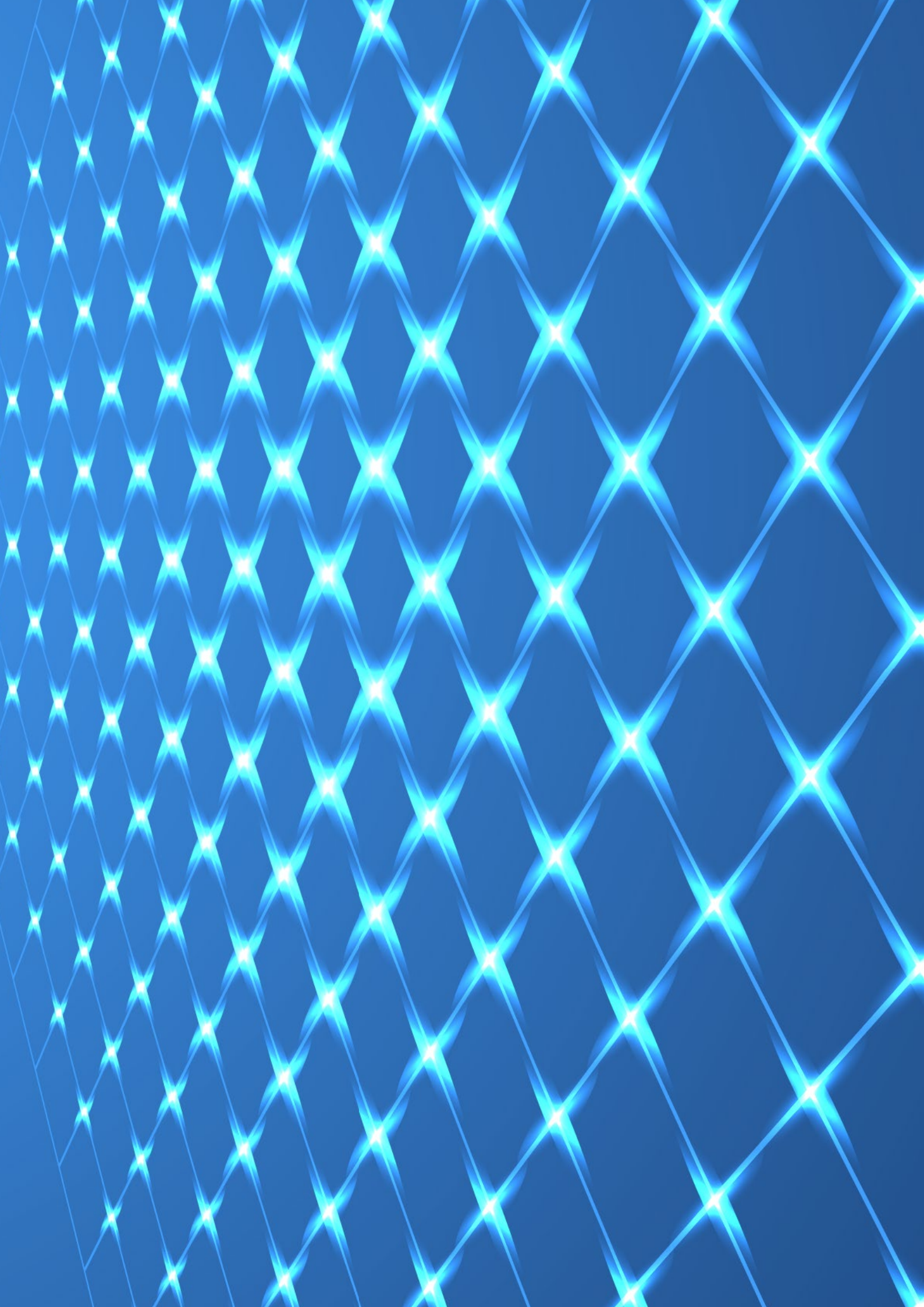
Coatings

ADV200 SP AC DRIVE FOR SOLAR WATER PUMPS

Simplicity, flexibility and **maximum efficiency**

Driving efficiency and sustainability

SUMMARY



Application sectors

Flood irrigation

Pivot irrigation

Water supply in remote zones

Farm drinking fountain

Wastewater treatment

Fish farming

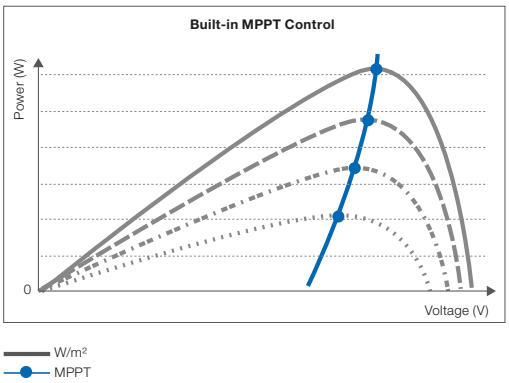
Solar pump application

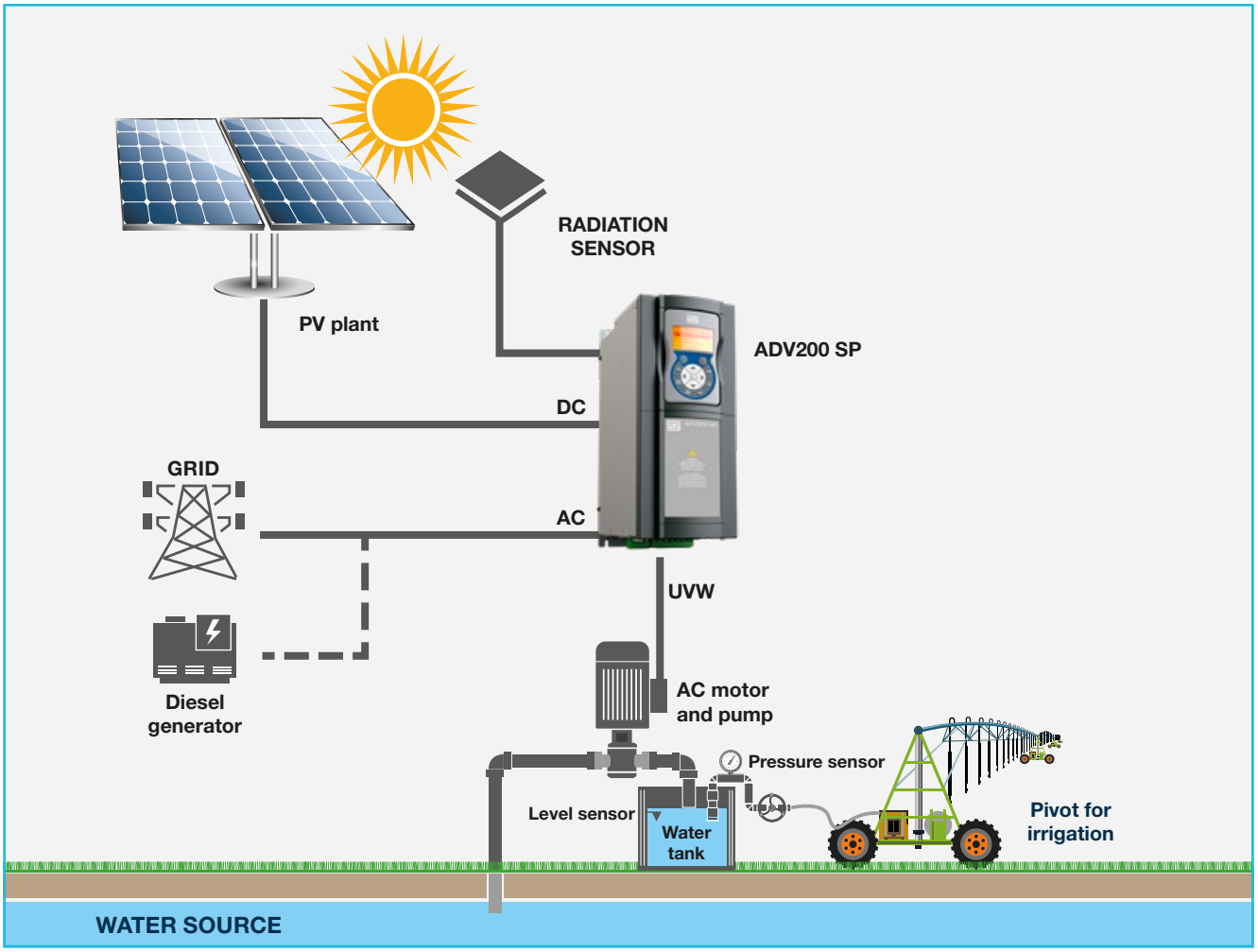
Solar-powered water pumping is based on PV technology that converts sunlight into electricity to pump water.
The PV panels are connected to an ADV200 SP drive, which converts the electrical energy supplied by the PV panel into mechanical energy, and this in turn is converted into hydraulic energy by the pump.
Synergies between the ADV200 SP Industrial Drives technology and the company's Solar and Pump application know-how have allowed WEG to develop a special SW with lift controller and special function to optimize the operation of solar pump systems.
In addition the ADV200 SP is able to manage pumping systems powered by different sources: solar PV panels alone (off-grid), or both PV panels and grid supply (dual supply systems).

Maximum efficiency and performance in any radiation and temperature condition

The Maximum Power Point Tracking algorithm (MPPT) is an integrated controller ensuring maximum output power from solar panels so as to obtain the best pump performance in any weather condition.
By matching the MPPT controller with the dual-supply operation mode, it is possible to achieve:

- Performance optimization
- Continuous operation
- Energy savings



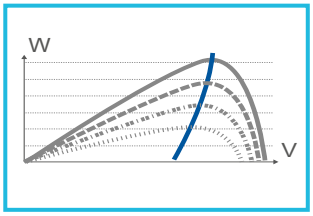


General characteristics

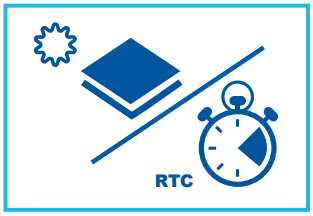
Power supply		DC: 330...800 V dc AC: 380 V ac -15%...480 V ac +10%, 50/60 Hz, ±5%
MPPT voltage range		350...750 V dc
MPPT efficiency		Up to 99.9%
Power range		From 1.5 kW to 1.8 MW
Overload		Light duty: 110% x In (for 60") Heavy duty: 150% x In (1' each 5'), 180% x In (for 0.5")
Control mode		Open loop V/f Open-loop vector control
DC Choke		Integrated choke on DC side (up to 160 kW)
Programming keypad		Integrated KB_ADV
Communication		Integrated RS485 serial line (Modbus-RTU)
Real time clock		Integrated
SW features		Integrated MPPT control and optimisation Dual source control Double PID Specific functions for pump control
Environmental conditions	Ambient temperature	-10 °C...+40 °C (+14 °F...+104 °F), +40 °C...+50 °C (+104 °F...+122 °F) with derating
	Altitude	Max 2,000 m (up to 1,000 m without derating)
Markings	CE	Complies with the EC directive concerning low voltage equipment (Directives LVD 2014/35/EU, EMC 2014/30/EU, RoHs 2011/65/EU)
	c UL us	cULus, complies with directives for the American and Canadian markets (except size 7 and parallels)

Special solar pump features

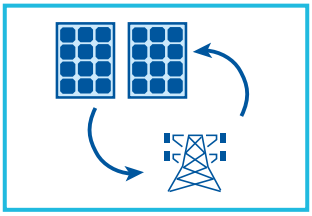
MPPT control



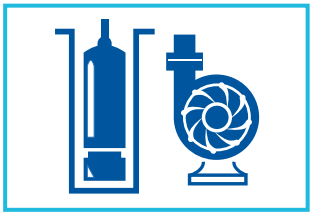
Auto start & stop



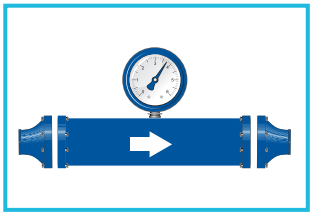
Dual source



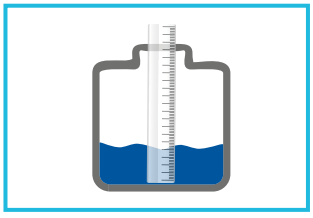
Pump types



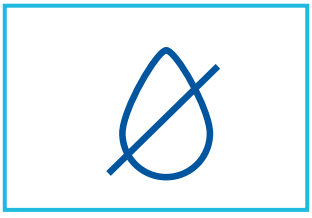
Pressure & flow control



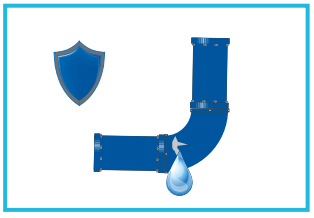
Tank level control



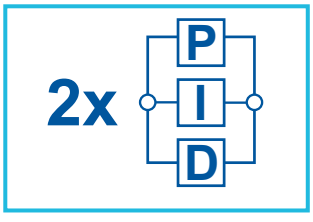
Dry run



System protection



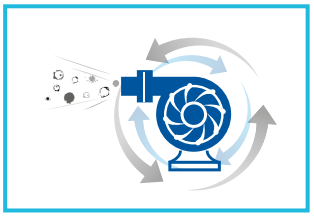
Double pid



Energy savings

Minimum speed

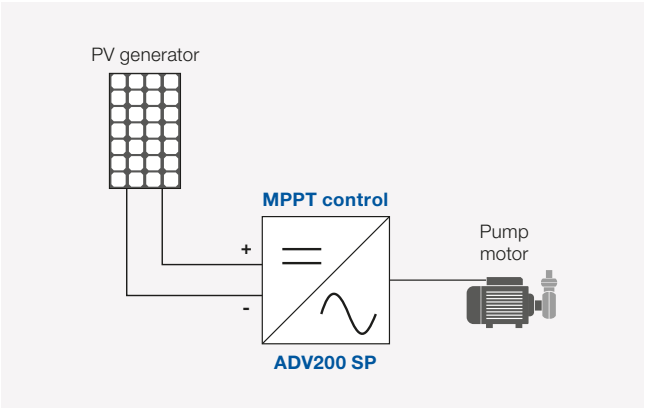
Pump cleaning



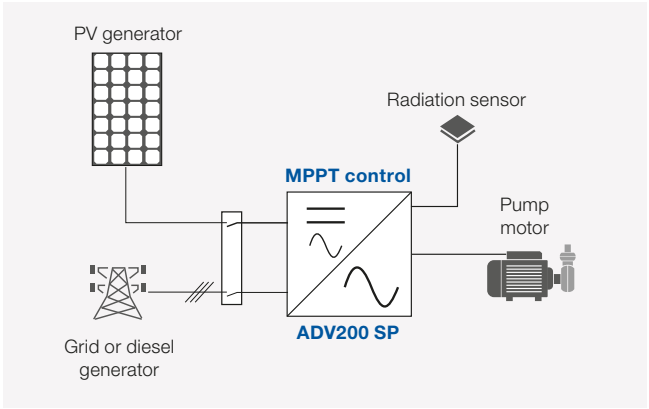
Connections

ADV200 SP for solar pump applications is suitable for both isolated and dual-supply systems (grid-connected or with secondary power source):

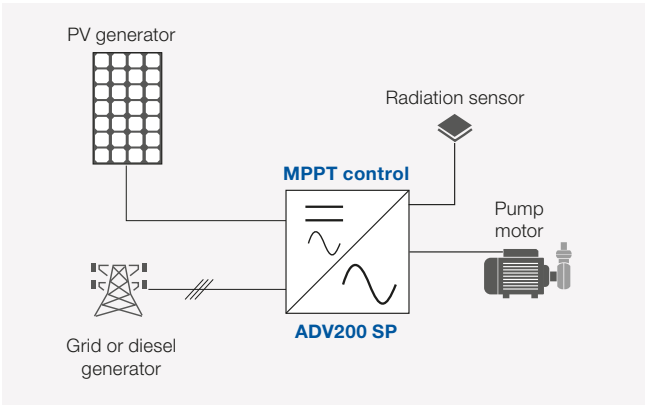
Isolated systems: PV alone



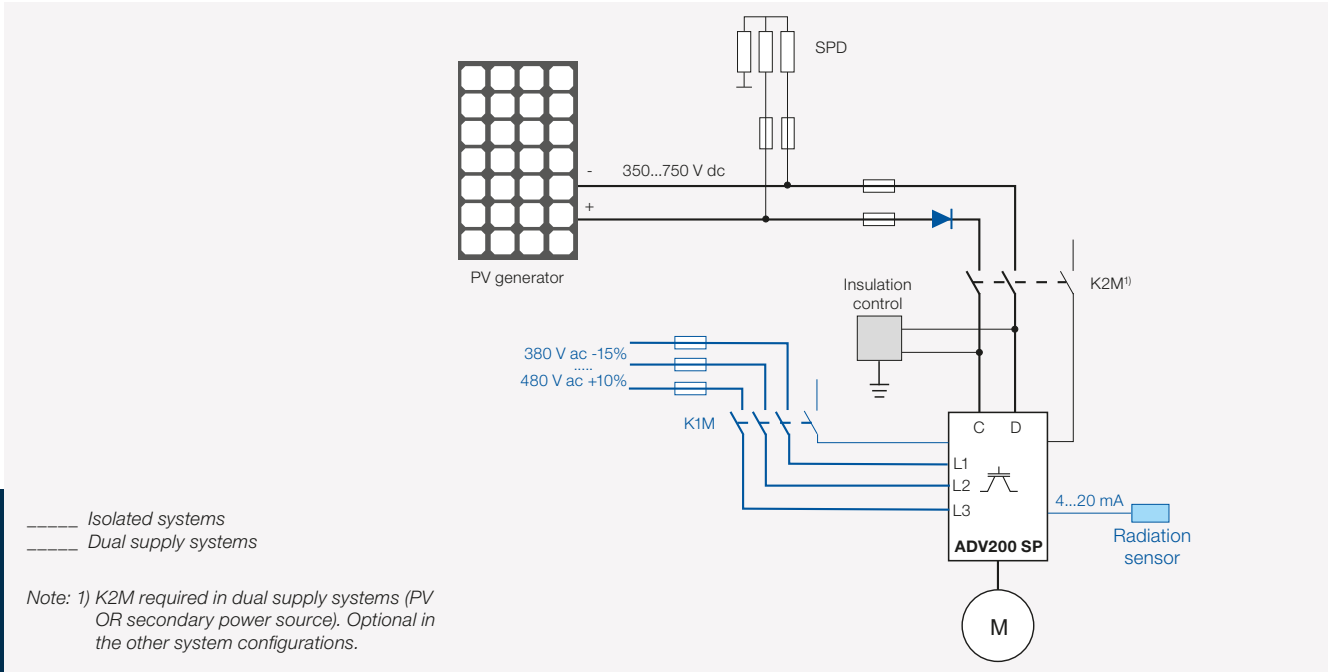
Dual supply systems: PV or secondary power source



Hybrids systems: PV and secondary power source



Standard connection



_____ *Isolated systems*
_____ *Dual supply systems*

Note: 1) K2M required in dual supply systems (PV OR secondary power source). Optional in the other system configurations.

Main features

Product range

Size	Power (LD)	DC Choke
1	1.5-5.5 kW	Built-in
2	7.5-15 kW	
3	18,5-30 kW	
4	37-55 kW	
5	75-110 kW	
6	132-160 kW	
7	200-400 kW	External
7 (Parallel)	500-1800 kW	

DC version available under request.

Multiple configurations

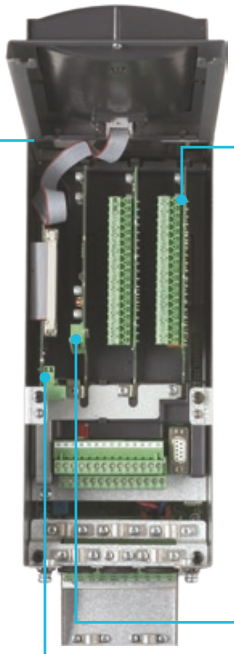
- Stand alone IP20
- External heatsink

Serial line

The RS485 serial line is incorporated as standard across the range to enable peer-to-peer or multidrop connections using Modbus-RTU protocol

Integrated keypad

- 4 lines display for 21 characters
- Clear alphanumeric text
- Full information of any parameters
- Fast navigating keys
- Key for displaying the last 10 parameters that have been changed
- DISP key for rapid display of operating parameters
- Upload - download and storage of 5 complete sets of drive parameters
- Remotable up to 10 meters



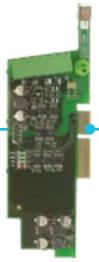
OPT cards

ADV200 SP manages up to 3 option cards:

I/O expansions

> I/O expansions

- EXP-IO-D6A4R1-ADV: 4 DI/2 DO/2 AI/2 AO/2 NO
- EXP-IO-D5R8-ADV: 4 DI/1 DO/8 NO
- EXP-IO-SENS-1000-ADV: 3 AI/2 AO signals from Pt-1000, NI1000, 0-10 V, 0/4…20 mA, KTY84, PTC (motor overtemperature control only)
- EXP-IO-SENS-100-ADV: 3 AI/2 AO signals from Pt-100, 0-10 V, 0/4...20 mA, KTY84, PTC (motor overtemperature control only)



Fieldbus interface

PROFIBUS DP · DeviceNet · CANopen · Modbus · PROFINET · EtherCAT

Safety card

- PL=e under - EN ISO 13849-1
- SIL 3 under - IEC EN 61508
  IEC EN 61800-5-2

+24 V dc

Regulation card external power supply

Input/output data

Values for Low Duty overload.
The parameters can be set to heavy duty mode; please refer to the manual for HD electrical data.

Sizes ADV200-SP	Input data		Output data				
	In DC input current[1]	In AC input current[2]	Inverter output	Pn mot		I2n Rated output current	
	[Arms]	[Arms]	[kVA]	@540 V dc @400 V ac [kW]	@650 V dc @460 V ac [HP]	@540 V dc @400 V ac [A]	@650 V dc @460 V ac [A]
1015	4.7	3.7	3	1.5	2	4.3	3.9
1022	6.2	4.9	4	2.2	3	5.8	5.2
1030	8.1	6.5	5.3	3	5	7.6	6.8
1040	10	8.1	6.6	4	5	9.5	8.6
1055	14	11.1	9	5.5	7.5	13	11.7
2075	18	14	11.4	7.5	10	16.5	14.9
2110	25	19.6	15.9	11	15	23	20.7
2150	33	26.4	21.5	15	20	31	27.9
3185	40	32.3	26.3	18.5	25	38	34.2
3220	48	39	32	22	30	46	41.4
3300	65	53	43	30	40	62	55.8
4370	80	64	52	37	50	75	67.5
4450	90	74	60	45	60	87	78.3
4550	125	89	73	55	75	105	94.5
5750	175	143	104	75	100	150	135
5900	210	171	125	90	125	180	162
51100	240	200	145	110	150	210	189
61320	290	238	173	132	175	250	225
61600	350	285	208	160	200	300	270
72000	430	350	267	200	250	385	347
72500	510	420	319	250	300	460	414
73150	710	580	409	315	400	590	531
73550	780	640	450	355	450	650	585
74000	850	710	506	400	500	730	657
500 kW	2 x 510	800	603	500	650	870	783
630 kW	2 x 710	1,100	776	630	850	1,120	1,008
710 kW	2 x 780	1,215	852	710	950	1,230	1,107
800 kW	2 x 850	1,350	956	800	1,100	1,380	1,242
1000 kW	3 x 780	1,800	1,247	1,000	1,300	1,800	1,620
1200 kW	3 x 850	2,020	1,420	1,200	1,600	2,050	1,845
1500 kW	4 x 850	2,460	1,760	1,500	2,000	2,540	2,286
1800 kW	5 x 850	3,080	2,148	1,800	2,500	3,100	2,790

Notes: 1) Motor cos phi 0.9 @540 V dc.
2) Motor cos phi 0.9 @400 V ac.

Dimensions and weights

Sizes		Dimensions: Width x Height x Depth		Weight	
		mm	inches	kg	lbs
ADV200-SP-1...		118 x 322 x 235	4.65 x 12.7 x 9.25	5.8	12.8
ADV200-SP-2...		150 x 392 x 250	5.91 x 15.43 x 9.84	10.2	22.5
ADV200-SP-3...		180 x 517 x 250	7.09 x 20.35 x 9.84	3185-3220 = 16.4 3300 = 22	3185-3220 = 36.2 3300 = 48.5
ADV200-SP-4...		268 x 616 x 270	10.55 x 24.25 x 10.63	32	70.6
ADV200-SP-5...		311 x 767 x 325	12.24 x 30.19 x 12.8	60	132.3
ADV200-SP-6...		422 x 878 x 360	16.61 x 34.6 x 14.2	90	198.4
ADV200-SP-72000		417 x 1,407 x 485	16.42 x 55.4 x 19.1	130	287
ADV200-SP-72500		417 x 1,407 x 485	16.42 x 55.4 x 19.1	130	287
ADV200-SP-73150		417 x 1,407 x 485	16.42 x 55.4 x 19.1	140	309
ADV200-SP-73550		417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
ADV200-SP-74000		417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
500 kW	ADV200-SP-72500-...-4-MS 05	417 x 1,407 x 485	16.42 x 55.4 x 19.1	130	287
	ADV200-SP-72500-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	130	287
630 kW	ADV200-SP-73150-...-4-MS 06	417 x 1,407 x 485	16.42 x 55.4 x 19.1	140	309
	ADV200-SP-73150-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	140	309
710 kW	ADV200-SP-73550-...-4-MS 07	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
800 kW	ADV200-SP-74000-...-4-MS 08	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-74000-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
1000 kW	ADV200-SP-73550-...-4-MS 10	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
1200 kW	ADV200-SP-74000-...-4-MS 12	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-74000-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-74000-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
1500 kW	ADV200-SP-73550-...-4-MS 15	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL2	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
1800 kW	ADV200-SP-73550-...-4-MS 18	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL2	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331
	ADV200-SP-73550-...-4-SL2	417 x 1,407 x 485	16.42 x 55.4 x 19.1	150	331

Drive type designation and models

Drive type designation

ADV200-SP - X XXX - X X X - X - XXYY - DC - SI

Inverter ADV200 Solar Pump series

Mechanical dimensions of the drive	
1	Size 1
2	Size 2
3	Size 3
4	Size 4
5	Size 5
6	Size 6
7	Size 7

Drive power, in kW	
015	1.5 kW
022	2.2 kW
030	3.0 kW
040	4.0 kW
055	5.5 kW
075	7.5 kW
110	11 kW
150	15 kW
185	18.5kW
220	22.0 kW
300	30.0 kW
370	37.0 kW
450	45.0 kW
550	55.0 kW
750	75.0 kW
900	90.0 kW
1100	110.0 kW
1320	132.0 kW
1600	160.0 kW
2000	200.0 kW
2500	250.0 kW
3150	315.0 kW
3550	355.0 kW
4000	400.0 kW

EXP-SFTy-ADV safety card	
SI	Included
[empty]	Not included

DC bus power supply version

Parallel version only		
XX	MS	Master
	SL	Slave
	SL2	Slave
YY	05	500.0 kW
	06	630.0 kW
	07	710.0 kW
	08	800.0 kW
	10	1,000.0 kW
	12	1,200.0 kW
	15	1,500.0 kW
	18	1,800.0 kW

Rated voltage	
4	400-480 V ac, 3ph / 50-60 Hz

Software	
X	Standard

Braking unit	
X	Not included
B	Included

Keypad	
X	Not included
K	Included

Drive type designation and models

Drive models & codes

Model	Code	Pn@400 V ac (LD)	Configuration
ADV200-SP-1015-KBX-4	S9001SP	1.5 kW	Internal braking unit – Built-in DC choke
ADV200-SP-1022-KBX-4	S9002SP	2.2 kW	Internal braking unit – Built-in DC choke
ADV200-SP-1030-KBX-4	S9003SP	3.0 kW	Internal braking unit – Built-in DC choke
ADV200-SP-1040-KBX-4	S9004SP	4.0 kW	Internal braking unit – Built-in DC choke
ADV200-SP-1055-KBX-4	S9005SP	5.5 kW	Internal braking unit – Built-in DC choke
ADV200-SP-2075-KBX-4	S9006SP	7.5 kW	Internal braking unit – Built-in DC choke
ADV200-SP-2110-KBX-4	S9007SP	11 kW	Internal braking unit – Built-in DC choke
ADV200-SP-2150-KBX-4	S9008SP	15 kW	Internal braking unit – Built-in DC choke
ADV200-SP-3185-KBX-4	S9009SP	18.5 kW	Internal braking unit – Built-in DC choke
ADV200-SP-3220-KBX-4	S9010SP	22 kW	Internal braking unit – Built-in DC choke
ADV200-SP-3300-KBX-4	S9011SP	30 kW	Internal braking unit – Built-in DC choke
ADV200-SP-4370-KXX-4	S9012SP	37 kW	Built-in DC choke
ADV200-SP-4450-KXX-4	S9014SP	45 kW	Built-in DC choke
ADV200-SP-4550-KXX-4	S9016SP	55 kW	Built-in DC choke
ADV200-SP-5750-KXX-4	S9018SP	75 kW	Built-in DC choke
ADV200-SP-5900-KXX-4	S9020SP	90 kW	Built-in DC choke
ADV200-SP-51100-KXX-4	S9021SP	110 kW	Built-in DC choke
ADV200-SP-61320-KXX-4	S9022SP	132 kW	Built-in DC choke
ADV200-SP-61600-KXX-4	S9023SP	160 kW	Built-in DC choke
ADV200-SP-72000-KXX-4	S9024SP	200 kW	
ADV200-SP-72500-KXX-4	S9025SP	250 kW	
ADV200-SP-73150-KXX-4	S9026SP	315 kW	
ADV200-SP-73550-KXX-4	S9027SP	355 kW	
ADV200-SP-74000-KXX-4	S9032SP	400 kW	

Note: Parallel version and higher powers under request.

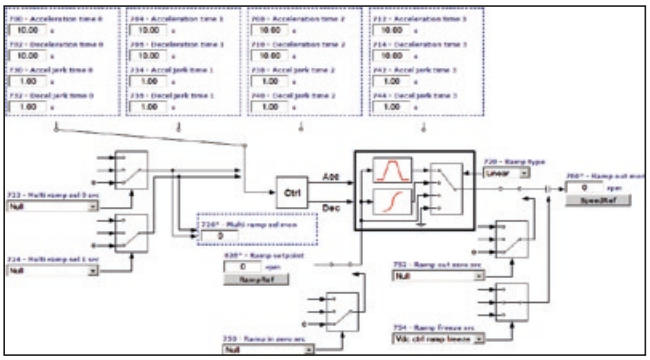
Software

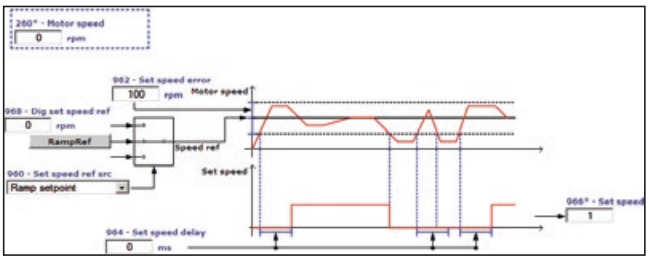
WEG_eXpress programming software

Applications
- Configuring parameters of WEG devices (instruments, drives, sensors)
- Tuning control parameters with on-line tests and trends
- Managing parameter archive for multiple configuration

Features
- Guided product selection
- Simplified settings
- Multiple languages
- Parameter printout
- Creation and storage of recipes
- Network autoscan
- Oscilloscope

WEG_eXpress software configures the parameters of the automation components, drives and sensors in the WEG catalogue. The graphic interface makes selecting and configuring parameters easy and intuitive. Devices are grouped according to product type and functions.
Products are searched by means of a context search and a display of product photos.
This provides a single device library for all WEG products.
Complete configuration information for every device is given in XML format to facilitate expansion of the catalogue and parameters.





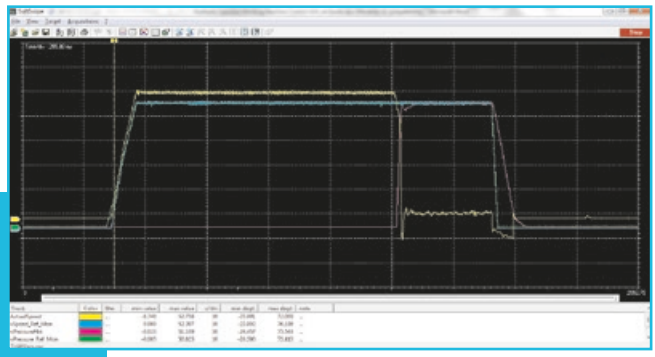
Software

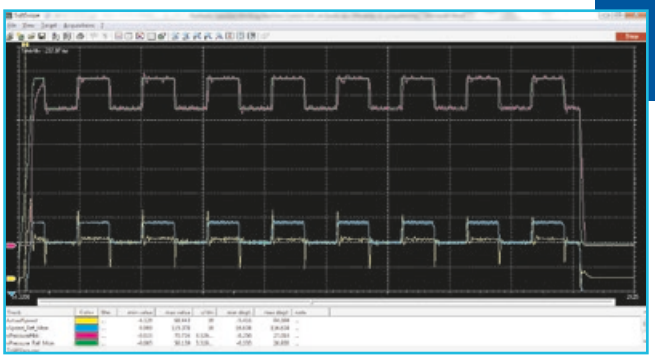
SoftScope

SoftScope is a software oscilloscope with synchronous sampling (buffered with a minimum sampling time of 1ms).
With SoftScope, the user can easily and quickly display a number of specific variables, such as commissioning variables, variables for testing performance levels achieved or for tuning control loops, etc.

SoftScope can be used to define the following parameters:

- Trigger conditions (e.g. climbing leading edge of a specific signal)
- Recording quality (a multiple of the basic clock at 1ms)
- Recording duration period
- System sizes to be recorded





Notes

Notes

Global presence is essential, as much as understanding your needs.

Global Presence

With more than 30,000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our ***ADV200 SP - AC Drive for Solar Water Pumps*** is the right choice for your application and business, assuring safety, efficiency and reliability.

- **Availability** is to have a global support network
- **Partnership** is to create solutions that suits your needs
- **Competitive edge** is to unite technology and inovation

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Cod: 50126937 | Rev: 00 | Date (m/y): 01/2023.