SubDrive SOLARPAK

SOLAR PUMPING SYSTEM

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Franklin Electric

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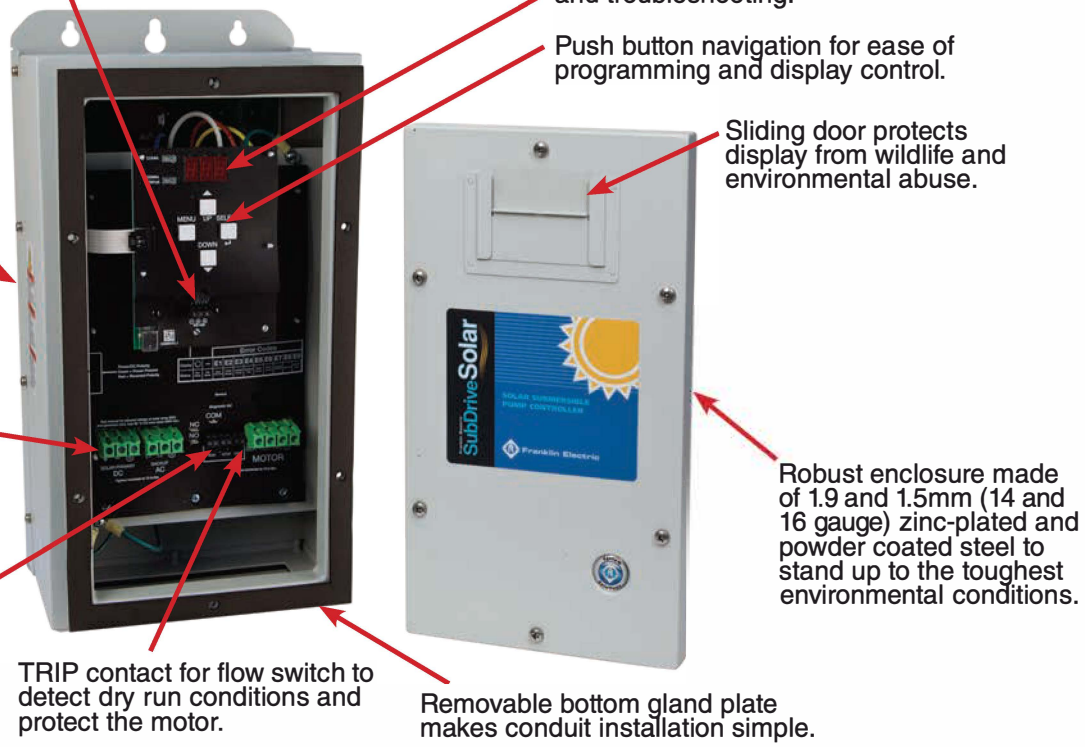

Applications

- Livestock watering
- Tank/Cistern filling
- Wildlife refuge & game farms
- Rural water supply for villages & homesteads
- Irrigation systems
- Fountains
- Vineyards
- Renewable energy projects
- Mining water transfer
- Water from bores, rivers, dams & creeks

Built-in Diagnostics and Protection

The SubDrive Solar QuickPAK products include diagnostic features and built-in protection from potentially harmful conditions.

- Surge
- Underload
- Undervoltage
- Locked pump
- Open circuit
- Short circuit
- Overheated controller
- Dry run
- Reverse polarity

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All-in-One Package

The SubDrive SolarPAK is the System Solution to your solar pumping requirements. Using Franklin quality components, our technical expertise in groundwater pumping, and innovative thinking based on global market inputs, we have developed a rugged, high-output system which tackles the challenges of remote and harsh environments. No other system delivers the features, benefits, and reliability of SubDrive SolarPAK in just one package!

The SubDrive SolarPAK includes:

- Franklin Electric 4" submersible motor
- Franklin Electric 4" Solar pump
- SubDrive Solar controller
- Flow switch with 10m cable
- Variety of flow rates available in: 18, 25, 30, 45, 70, 100, 150, and 270 lpm
- Motor and drive ratings available in: 0.55, 1.1 and 2.2 kW

Features

- High flow system for faster tank fill and significant water output
- Proven motor and pump technology and reliability
- Robust IP55, NEMA 3 drive enclosure minimizes impact of wildlife, insects, dust, and weather
- DC and AC power inputs with auto-switching to generator back-up
- Seven segment controller display shows real-time input watts and system status
- Remote telemetry capability through a RS-485 continuous data port
- MPPT – Max Power Point Tracking for maximizing efficiency of input power
- Soft start feature prevents water hammer and increases system life
- Allows use of new solar array or retrofit to existing array (subject to size and performance check)
- Simple installation and no required maintenance
- Built-in diagnostics and protection
- C-tick and UL approved
- OBSERVANT™ compatible for remote access and control

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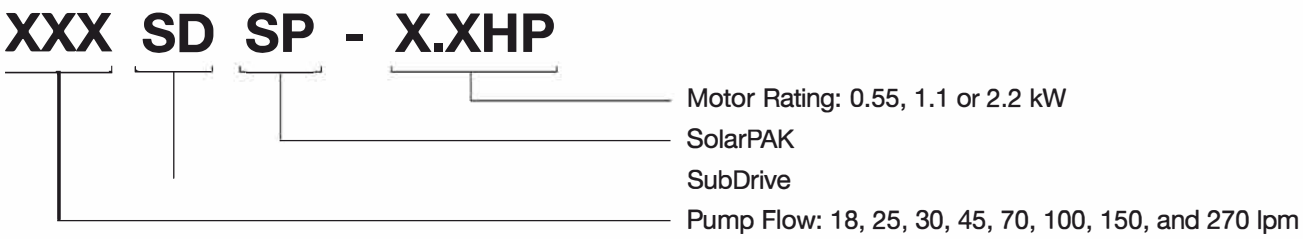
GlobalLink OBSERVANT™

Ordering Information

Model Number Description



SubDrive SolarPAK Model Numbers

SolarPAK		SubDrive Solar Controller		Solar Pump – BSPP				Motor		Flow Switch BSPP	
SolarPAK Model	Order No.	Drive Model	Part No.	LPM	Stages	Solar Pump	Part No.	kW	Part No.	Model	Part No.
18SDSP-0.55KW	90030510	SD Solar 0.55kW N3	5870300553	18	18	18SL1S4-PEXB	90020504	0.55	2349029204S	F21	226019101
25SDSP-0.55KW	90030710	SD Solar 0.55kW N3	5880300553	25	13	25SL15S4-PEXB	90020704	0.55	2349029204S	F21	226019101
30SDSP-0.55KW	90031010	SD Solar 0.55kW N3	5890300553	30	8	30SL15S4-PEXB	90021004	0.55	2349029204S	F21	226019101
45SDSP-0.55KW	90031510	SD Solar 0.55kW N3	5900300553	45	5	45SL15S4-PEXB	90021511	0.55	2349029204S	F21	226019101
18SDSP-1.1KW	90030520	SD Solar 1.1 kW N3	5870301113	18	30	18SL1S4-PEXB	90020508	1.1	2345049203S	F21	226014101
25SDSP-2.2KW	90030730	SD Solar 2.2 kW N3	5870301223	25	30	25SL15S4-PEXB	90020711	2.2	2343062604	F21	226014101
30SDSP-1.1KW	90031020	SD Solar 1.1 kW N3	5870301113	30	18	30SL15S4-PEXB	90021011	1.1	2345049203S	F21	226014101
30SDSP-2.2KW	90031030	SD Solar 2.2 kW N3	5870301223	30	18	30SL15S4-PEXB	90021011	2.2	2343062604	F21	226014101
45SDSP-1.1KW	90031520	SD Solar 1.1 kW N3	5870301113	45	15	45SL15S4-PEXB	90021511	1.1	2345049203S	F21	226014101
45SDSP-2.2KW	90031530	SD Solar 2.2 kW N3	5870301223	45	15	45SL15S4-PEXB	90021511	2.2	2343062604	F21	226014101
70SDSP-1.1KW	90032520	SD Solar 1.1 kW N3	5870301113	70	10	70SL15S4-PEXB	90022511	1.1	2345049203S	F21	226019101
70SDSP-2.2KW	90032530	SD Solar 2.2 kW N3	5870301223	70	10	70SL15S4-PEXB	90022511	2.2	2343062604	F21	226019101
100SDSP-1.1KW	90033520[a]	SD Solar 1.1 kW N3	5870301113	100	10	100SL15S4-PEXB	90023511	1.1	2345049203S	F21	226019101
100SDSP-2.2KW	90033530[a]	SD Solar 2.2 kW N3	5870301223	100	10	100SL15S4-PEXB	90023511	2.2	2343062604	F21	226019101
150SDSP-1.1KW	90034520[a]	SD Solar 1.1 kW N3	5870301113	150	7	150SL15S4-PEXB	90024511	1.1	2345049203S	F21	226019101
150SDSP-2.2KW	90034530[a]	SD Solar 2.2 kW N3	5870301223	150	7	150SL15S4-PEXB	90024511	2.2	2343062604	F21	226019101
270SDSP-1.1KW	90039020[a]	SD Solar 1.1 kW N3	5870301113	270	5	270SL15S4-PEXB	90029011	1.1	2345049203S	F21	226019101
270SDSP-2.2KW	90039030[a]	SD Solar 2.2 kW N3	5870301223	270	5	270SL15S4-PEXB	90029011	2.2	2343062604	F21	226019101

* A 10 metre cable for use with the flow switch is included in the controller packaging

** 316SS Motors available on request

[a] 100, 150 and 270 LPM pump ends are supplied with external 2" BSP Check valve.

[b] For River, Dam and Creek applications, install 316SS motors with mechanical seals are recommended.

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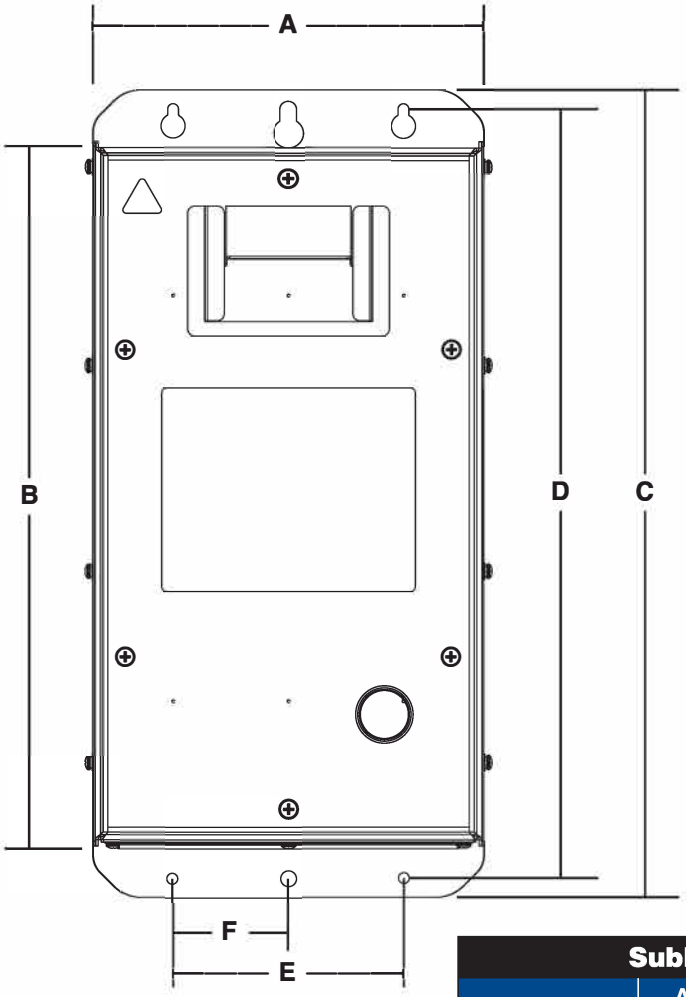
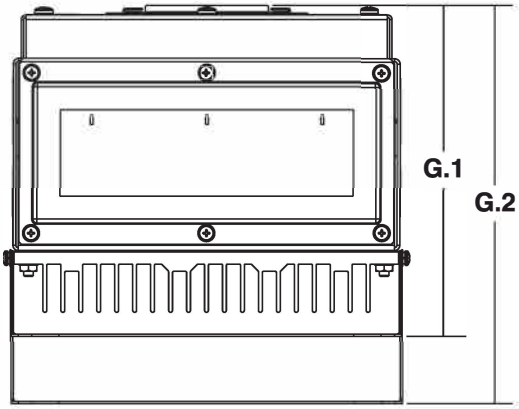
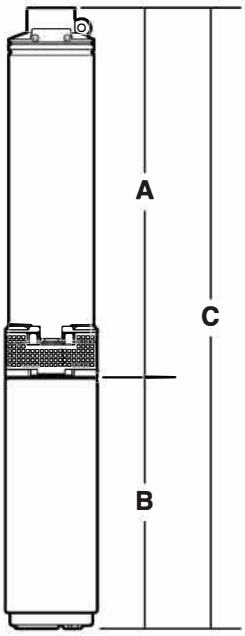
Dimensions





SubDrive Solar Controller Dimensions

	A	B	C	D	E	F	G.1	G.2
Centimeters	25.9	46.4	53.4	50.8	15.2	7.6	22.1	26.5
Inches	10.2	18.3	21.0	20.0	6.0	3.0	8.7	10.4



Solar PMA Dimensions

lpm	USGPM	kW	hp	Stages	A		B		C		Discharge	PE Weight		PMA Weight	
					mm	inches	mm	inches	mm	inches		kg	lbs	kg	lbs
18	5	1.1	1.5	30	866	34.1	298	11.7	1164	45.8	1 1/4"	9	19	22	48
30	10	1.1	1.5	18	642	25.3	298	11.7	940	37.0	1 1/4"	7	16	20	45
45	15	1.1	1.5	15	521	20.5	298	11.7	819	32.2	1 1/4"	7	15	20	44
70	25	1.1	1.5	10	488	19.2	298	11.7	786	30.9	1 1/4"	5	10	18	39
100	35	1.1	1.5	10	508	20.0	298	11.7	806	31.7	2"	5	11	18	40
150	45	1.1	1.5	7	593	23.3	298	11.7	891	35.1	2"	7	16	20	45
270	90	1.1	1.5	5	575	22.6	298	11.7	873	34.4	2"	7	15	20	44
25	7	2.2	3	30	866	34.1	408	16.1	1274	50.2	1 1/4"	9	20	28	61
30	10	2.2	3	18	645	25.3	408	16.1	1053	41.4	1 1/4"	7	16	26	57
45	15	2.2	3	15	521	20.5	408	16.1	929	36.6	1 1/4"	7	15	25	56
70	25	2.2	3	10	488	19.2	408	16.1	896	35.3	1 1/4"	5	10	23	51
100	35	2.2	3	10	508	20.0	408	16.1	916	36.1	2"	5	11	24	52
150	45	2.2	3	7	593	23.3	408	16.1	1001	39.4	2"	7	16	26	57
270	90	2.2	3	5	575	22.6	408	16.1	983	38.7	2"	7	15	25	56

Note: Maximum diameter across cable guard is 99.1 mm (3.90") on all models.

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Drive Specifications

SubDrive Solar Controller Specifications			
	0.55 kW model	1.1 kW model	2.2 kW model
Controller Model No.	5870300553	5870301113	5870301223
Output			
Output voltage, max	100 V AC, 3-phase	200 V AC, 3-phase	200 V AC, 3-phase
Max Amps (RMS)	8.6 A, each phase	6.8 A, each phase	12.5 A, each phase
Output Frequency	30-60 Hz	30-58 Hz	30-68 Hz
Efficiency at Max Power	96%	96%	96%
PV source			
Input Voltage, at mpp	*95 - 330 V DC	**190 – 330 V DC	**190 – 330 V DC
Max Amps Input	8.7 A DC, continuous	7 A DC, continuous	12 A DC, continuous
Power at mpp	up to 1400 watts	Up to 2000 watts	up to 3500 watts
Alternate AC Generator			
Input voltage	230 V AC, single phase	230 V AC, single phase	230 V AC, single phase
Max Amps (RMS)	9.6 A	16 A	25 A
Power and VA capability	Follow instruction manual for proper generator sizing data	Follow instruction manual for proper generator sizing data	Follow instruction manual for proper generator sizing data

For Use With							
Franklin Electric Motor		234902----		234504----		234306----	
	LPM	Stages	Model No.	Stages	Model No.	Stages	Model No.
SubDrive Solar Pumps (BSPP)	18	18	90020504	30	90020508	30	-
	25	13	90020704	30	-	30	90020711
	30	8	90021004	18	90021011	18	90021011
	45	6	90021504	15	90021511	15	90021511
	70	-	.	10	90022511	10	90022511
	100	-	-	10	90023511	10	90023511
	150	-	-	7	90024511	7	90024511
	270	-	-	5	90029011	5	90029011

Controller Size	L X W X D	L X W X D	L X W X D
Centimeters	(53.34 X 25.87 X 21.87 cm)	(53.34 X 25.87 X 21.87 cm)	(53.34 X 25.87 X 26.31 cm)
Inches	(21.00” X 10.19” X 8.61”)	(21.00” X 10.19” X 8.61”)	(21.00” X 10.19” X 10.36”)
Controller Weight			
	19 kg (41 lbs)	19 kg (41 lbs)	22 kg (47 lbs)
Operating Conditions			
Temperature Range	-25 °C to 50 °C (40 °C max when using AC generator)	-25 °C to 50 °C (40 °C max when using AC generator)	-25 °C to 50 °C (40 °C max when using AC generator)
Relative Humidity Range	0 to 100% Condensing	0 to 100% Condensing	0 to 100% Condensing

* Drive will attempt to start the pump/motor at 95 V DC, and attempt to continue operation down to 75 V DC.

** Drive will attempt to start the pump/motor at 190 V DC, and attempt to continue operation down to 150 V DC.

Absolute maximum open circuit voltage input to the controller = 410 Voc for all controller models.

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Cable Selection

Circuit Breaker and Maximum Input Cable Lengths – AC Power supply to Controller (metres)

			mm²				
Model Series	**Breaker Amps**	**Volts**	**2.5**	**4**	**6**	**10**	**16**
SubDrive Solar 0.55 / 1.1kW	15	208	38	61	92	155	245
	15	230	43	68	102	170	270
SubDrive Solar 2.2kW	30	208			46	77	123
	25	230			61	102	163

Maximum allowable wire lengths are measured between the power service entry point and the controller as a guide; these lengths have been calculated on the basis of standard TPS cabling @ 45˚C being used with the SubDrive Solar installation. Franklin Electric recommends that all electrical cable selections should be specified by your electrical professional to ensure they comply with AS/NSZ3000 and National Electrical Codes and /or local codes.

Maximum Motor Cable Length (metres)

			mm²				
	HP	**kW**	**2.5**	**4**	**6**	**10**	**16**
SubDrive Solar 0.55kW	0.75	0.55	40	70	110	190	
SubDrive Solar 1.1kW	1.5	1.1	95	160	245	415	
SubDrive Solar 2.2kW	3	2.2	51	86	130	224	365

Maximum allowable wire lengths are measured between the controller and motor as a guide, these lengths have been calculated on the basis of Franklin Electric submersible cabling being used @ 45˚C with the SubDrive Solar installation. Franklin Electric recommends that all electrical cable selections should be specified by your electrical professional to ensure they comply with AS/NSZ3000 and National Electrical Codes and /or local codes.

Orange circular & TPS - electrical cable is not rated for submersible use. Warranty void if used. All wiring to comply with AS/NSZ3000 and National Electrical Codes and /or local codes.

Cautions:

There are many DIY (Do It Yourself) PV solar kits available which you can be self-installed. SubDrive Solar and associated equipment is not a DIY PV System and must be professionally installed.

SubDrive Solar operates at above 90 volts which requires installation by suitably qualified electricians that have been trained on solar PV installations and meet State and Territory regulations.

Any questions relating to your SubDrive Solar installations and any possible rebates can be directed back to the supplying Franklin Dealer or to your solar installer.

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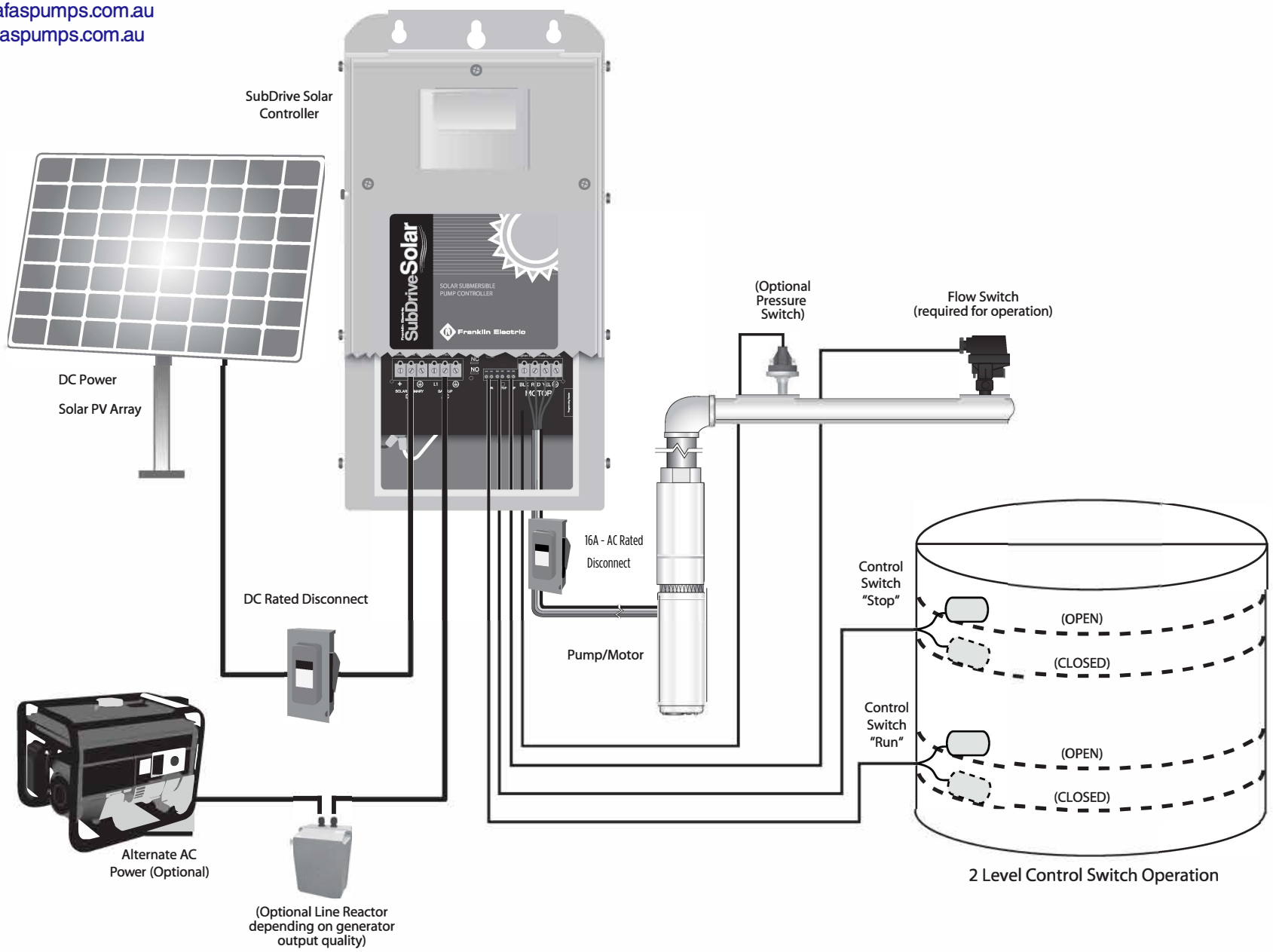


Average* water requirements for stock and farm animals

Stock type	Minimum daily consumption per head per day in litres
Sheep	
– Weaners	2 to 4
Adult dry sheep:	
– Grassland	2 to 6
– Saltbush	4 to 12
Ewes with lambs	4 to 10
Cattle	
Lactating cows:	
– Grassland	40 to 100
– Saltbush	70 to 140
Young stock	25 to 50
Dry stock (400 kg)	35 to 80
Horses	40 to 50
Hogs, Pigs	16 to 22
Chickens (100)	16 to 20
Turkeys (100)	28 to 33

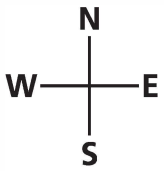
Notes:

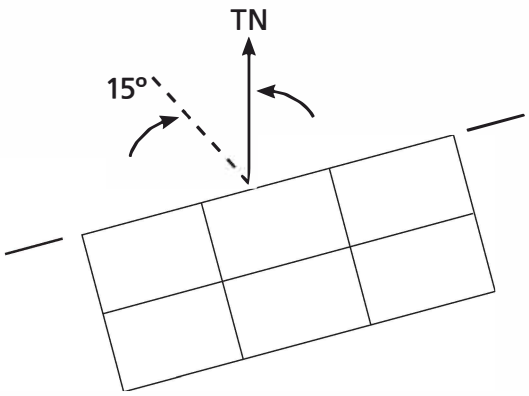
Does not include allowances for dissolved solids (salinity), saltbush regions, temperature and climatic variances. Offered as a guide only*.

Consult your local state Primary Producer office for more details.

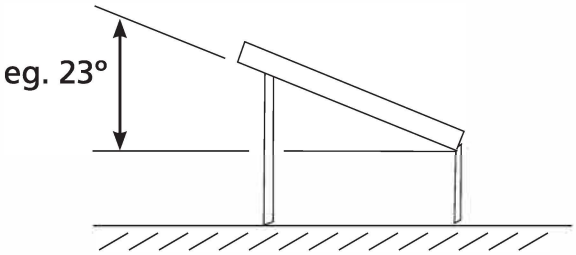
Positioning of solar arrays

1. 15° West of true North





2. For elevation:
   Your latitude less 5°
   eg: -28 S less 5° = -23°



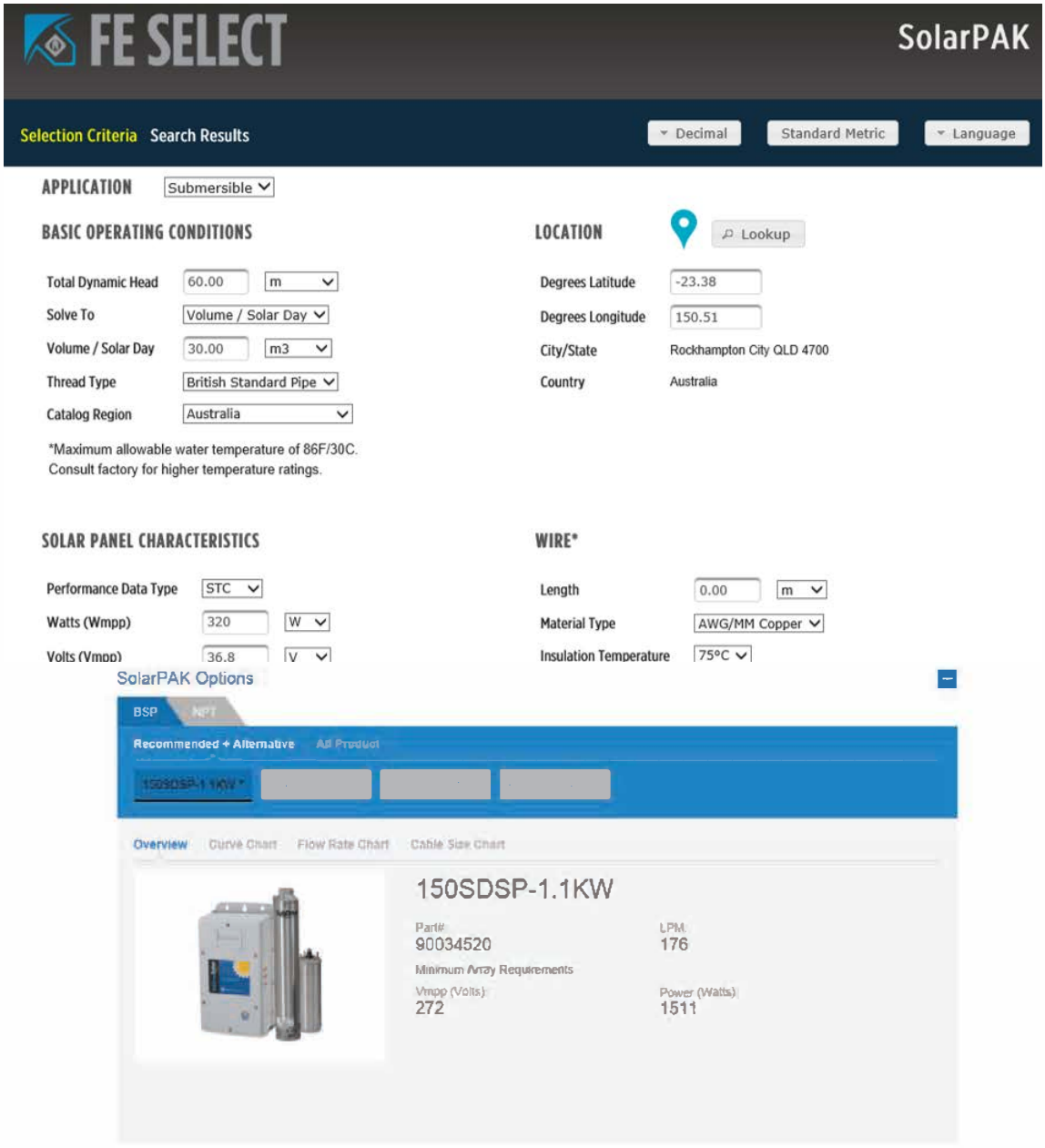
Offered as a guide only.

These diagrams and guidelines are suggestions from various sources to offer the best performances of your solar array and pump output.

SubDrive SOLARPAK SOLAR PUMPING SYSTEM

SubDrive SolarPAK Selector:

Franklin's user-friendly SubDrive SolarPAK Selector helps you determine the optimal system for your solar project. Simply input your location, duty requirements, and solar panel characteristics (if known) and the system will automatically recommend the SolarPAK model and array configuration best for your application.



* Above screen shot is illustrative only and is subject to continuous improvement

The Franklin Electric SubDrive Solar Selector and other information on our series of solar products can be found on

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