

# SUBMERSIBLE MOTORS AND ACCESSORIES





**Franklin Electric**



**Quality in the Well**



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NOTE: Franklin Electric Europa GmbH reserves the right to amend specification without prior notice.

For the most up-to-date product information, visit [franklinwater.eu](http://franklinwater.eu).



# 4" Super Stainless 1~ PSC

## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase PSC motor has been electrically optimized to offer reliable pump starting over a wide range of incoming voltages. It should ideally be combined to the Franklin Electric SubStart/SubTronicSC control boxes for maximum system performance, protection and warranty.



### Product features:

- Hermetically sealed stator with 316SS shell. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Technical Specification

- Motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Pollution Recovery Motor Version Specifications:

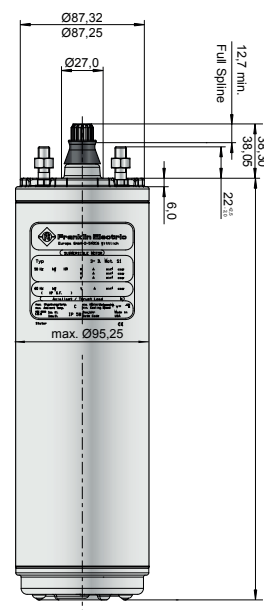
- Fluorelastomere (Viton®) rubber parts
- Special Polyurethane (PUR) lead assemblies
- 304SS (316SS Stator) graded stainless steel as standard

### Options

- Built in lightning arrestors
- Various cable lengths
- Motor sets including control box, lead and splice kit
- Alternative material executions

### 1~ 4" Encapsulated Motors PSC / 220- 230V / 50Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | C<br>[μF]<br>450V | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-------------------|-----------|-----------|
| 0,25                   | 4000            | 220                   | 2865                                   | 2,3                   | 9,0                   | 51       | 0,96         | 0,82                   | 0,73                   | 12,5              | 237,2     | 7,0       |
|                        |                 | 230                   | 2875                                   | 2,4                   | 9,4                   | 50       | 0,92         | 0,83                   | 0,80                   |                   |           |           |
| 0,37                   | 4000            | 220                   | 2850                                   | 3,2                   | 12,1                  | 54       | 0,97         | 1,21                   | 1,07                   | 16                | 251,1     | 7,5       |
|                        |                 | 230                   | 2860                                   | 3,3                   | 12,6                  | 54       | 0,91         | 1,24                   | 1,17                   |                   |           |           |
| 0,55                   | 4000            | 220                   | 2840                                   | 4,2                   | 16,9                  | 63       | 0,98         | 1,85                   | 1,50                   | 20                | 276,2     | 8,6       |
|                        |                 | 230                   | 2850                                   | 4,3                   | 17,7                  | 63       | 0,94         | 1,90                   | 1,63                   |                   |           |           |
| 0,75                   | 4000            | 220                   | 2825                                   | 5,7                   | 21,7                  | 61       | 0,99         | 2,5                    | 2,3                    | 35                | 297,2     | 9,5       |
|                        |                 | 230                   | 2845                                   | 5,7                   | 22,7                  | 59       | 0,98         | 2,5                    | 2,5                    |                   |           |           |
| 1,1                    | 4000            | 220                   | 2830                                   | 8,1                   | 32,5                  | 65       | 0,97         | 3,7                    | 2,9                    | 40                | 321,2     | 11,0      |
|                        |                 | 230                   | 2845                                   | 8,4                   | 33,9                  | 63       | 0,92         | 3,7                    | 3,1                    |                   |           |           |
| 1,5                    | 4000            | 220                   | 2820                                   | 10,4                  | 39,9                  | 68       | 0,98         | 5,1                    | 3,6                    | 50                | 353,2     | 11,7      |
|                        |                 | 230                   | 2830                                   | 10,7                  | 41,7                  | 66       | 0,95         | 5,1                    | 3,9                    |                   |           |           |
| 2,2                    | 4000            | 220                   | 2825                                   | 14,7                  | 59,2                  | 70       | 0,99         | 7,4                    | 5,0                    | 70                | 451,2     | 15,5      |
|                        |                 | 230                   | 2840                                   | 14,7                  | 61,8                  | 68       | 0,97         | 7,4                    | 5,5                    |                   |           |           |





# 4"

## Super Stainless

### 1~ PSC Motor Set

#### Submersible Motors

##### Quality in the Well

In an effort to ease our customers ordering, stock holding and inventory management, Franklin Electric Europa GmbH is introducing the PSC Motor Kit. Consisting of the submersible motor, control box, motor short lead and splicing kit all packaged into one compact yet sturdy box, this kit is the ideal stock item to drive your pump.



#### Product features

- One stop shop – no hassle selecting different components to work together
- Everything available at the same time
- All components matched and warranted by Franklin Electric
- Maximum flexibility – one motor kit can drive as many as 5 different pump models
- Any practical drop cable length (up to 10mm<sup>2</sup>) can be spliced using included kit

#### Technical Specification

- Motor range 0,25 - 2,2kW
- 4" PSC Motor with NEMA flange
- Motor protection level: IP 68
- Box protection level: IP 54
- Voltage: 220 - 240V; - 6 / +10 %; 50Hz single phase

#### Options

- Motor cable VDE, KTW approved (1,5m; special lengths available)

#### PSC Motor Set Model numbers

| P <sub>N</sub><br>[kW] | U <sub>N</sub><br>[V] | Model nb.     |
|------------------------|-----------------------|---------------|
| 0,25                   | 220-230               | 254 803 6700C |
|                        | 230-240               | 254 813 6700C |
| 0,37                   | 220-230               | 254 805 6700C |
|                        | 230-240               | 254 815 6700C |
| 0,55                   | 220-230               | 254 807 6700C |
|                        | 230-240               | 254 817 6700C |
| 0,75                   | 220-230               | 254 808 6700C |
|                        | 230-240               | 254 818 6700C |
| 1,10                   | 220-230               | 254 809 6700C |
|                        | 230-240               | 254 819 6700C |
| 1,50                   | 220-230               | 254 810 6700C |
|                        | 230-240               | 254 820 6700C |
| 2,20                   | 220-230               | 254 811 6700C |
|                        | 230-240               | 254 821 6700C |



## PSC Motor Set Description

### The PSC Motor

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase PSC motor has been electrically optimized to offer reliable pump starting over a wide range of incoming voltages. It should ideally be combined to the Franklin Electric SubStart/SubTronicSC control boxes for maximum system performance, protection and warranty.

#### Product features

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water.

#### Technical Specification

- PSC motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1



## The SubStartSC® Single phase Submersible Motor Starter

The SubStartSC® range covers all PSC motors from 0.25kW to 2.2kW for all voltages. Ergonomic design, attention to detail and unique features make the SubStartSC® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.

#### Product features

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors



## Splicing Kit 1,5 - 10mm²

- 4 wire
- 1,5 - 10mm²
- up to 1,2kV



# 4" 1 Phase 2-wire Motors Super Stainless

## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The genuine Franklin Electric 2-wire motor is a split phase, control-box less submersible motor for direct connection to a fused power supply. It incorporates a long-life electronic switch that allows it to run without the aid of external controls or capacitors. Furthermore, it offers a reverse impact torque that can help loosening sand-locked pumps and comes factory-equipped with automatic reset overload and surge protectors.



### Product features

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water
- Two wire plus ground connection
- Automatic reset overload internal to the motor
- Built-in surge arrestors

### Technical Specification

#### Standard Motor:

- Motor range: 0,37 – 1,1kW
- 4" NEMA flange
- Rotation: CCW facing shaft end (CW upon request)
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08 m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%  $U_N$
- Voltage tolerance 60Hz from nominal:  $\pm 10\% U_N$
- Protection requirements: EN 60947-4-1

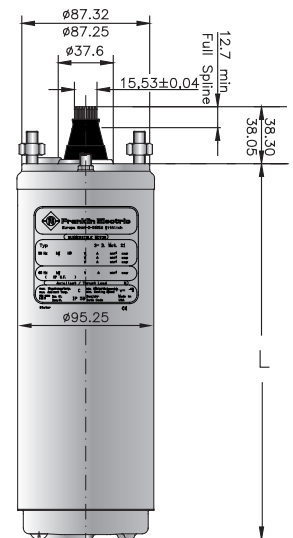
### Brackish Water version Specifications

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life.

### Options

- Motor cable VDE, KTW approved ( 1,5m; special lengths available)
- Motors with factory- installed lead in Single Packing

| 4" Encapsulated Motors<br>1~ 2wire / 230 V / 50 Hz |                 |              |                               |              |              |               |                    |               |               |           |           |
|--|-----------------|--------------|-------------------------------|--------------|--------------|---------------|--------------------|---------------|---------------|-----------|-----------|
| $P_N$<br>[kW]                                      | Thrust<br>F [N] | $U_N$<br>[V] | $n_n$<br>[min <sup>-1</sup> ] | $I_N$<br>[A] | $I_A$<br>[A] | $\eta$<br>[%] | $\cos \phi$<br>[%] | $T_N$<br>[Nm] | $T_A$<br>[Nm] | L<br>[mm] | m<br>[kg] |
| 0,37   | 3000            | 220          | 2875                          | 4,1          | 24,4         | 57            | 0,76               | 1,24          | 1,18          | 228,2     | 7,8       |
|  |                 | 230          | 2890                          | 4,1          | 25,5         | 57            | 0,73               | 1,23          | 1,29          | 228,2     | 7,8       |
| 0,55   | 3000            | 220          | 2870                          | 5,7          | 35,0         | 59            | 0,77               | 1,85          | 1,7           | 248,2     | 8,5       |
|  |                 | 230          | 2890                          | 5,8          | 36,6         | 59            | 0,73               | 1,85          | 1,9           | 248,2     | 8,5       |
| 0,75   | 3000            | 220          | 2875                          | 7,2          | 46,6         | 62            | 0,78               | 2,5           | 2,1           | 282,6     | 9,9       |
|  |                 | 230          | 2890                          | 7,3          | 48,7         | 61            | 0,75               | 2,5           | 2,3           | 282,6     | 9,9       |
| 1,10   | 3000            | 220          | 2880                          | 10,6         | 57,9         | 63            | 0,77               | 3,7           | 2,7           | 338,6     | 12,3      |
|  |                 | 230          | 2895                          | 10,8         | 59,7         | 63            | 0,73               | 3,7           | 2,9           | 338,6     | 12,3      |







# 4" 1 Phase 3-wire Motors Super Stainless

## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase 3-wire motor has been designed for highest achievable starting torque and shaft power from single phase power supplies. It is therefore ideally suited for applications where starting torque is paramount and 3 phase motors cannot be used. It should ideally be combined to the Franklin Electric 3-wire control boxes for maximum system performance, protection and warranty.



### Product features

- Hermetically sealed stator with 316SS shell. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Technical Specification

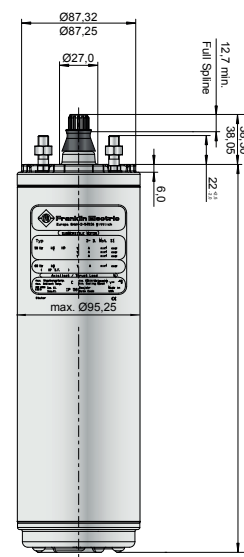
- Motor range: 0,25 – 2,2kW
- 4" NEMA flange
- Rotation: CCW facing shaft end
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Options

- Built in lightning arrestors
- Motors in full 316SS
- Various cable lengths
- Alternative material executions

1~ 4" Encapsulated Motors  
3 wire / 230 V / 50 Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | η <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| 0,25                   | 4000            | 230                   | 2870                                   | 2,8                   | 9,7                   | 53       | 0,75         | 0,83                   | 1,65                   | 237,2     | 6,2       |
| 0,37                   | 4000            | 230                   | 2870                                   | 4,0                   | 13,7                  | 56       | 0,74         | 1,23                   | 2,05                   | 251,1     | 6,7       |
| 0,55                   | 4000            | 230                   | 2880                                   | 5,9                   | 21,6                  | 56       | 0,73         | 1,82                   | 3,2                    | 271,2     | 7,5       |
| 0,75                   | 4000            | 230                   | 2870                                   | 7,3                   | 27,8                  | 61       | 0,76         | 2,5                    | 4,2                    | 297,2     | 8,6       |
| 1,1                    | 4000            | 230                   | 2885                                   | 8,6                   | 41,2                  | 68       | 0,84         | 3,7                    | 6,8                    | 353,2     | 10,8      |
| 1,5                    | 4000            | 230                   | 2875                                   | 10,4                  | 53,3                  | 71       | 0,88         | 4,9                    | 9,5                    | 364,2     | 11,1      |
| 2,2                    | 4000            | 230                   | 2885                                   | 15,3                  | 74,5                  | 73       | 0,88         | 7,3                    | 15,0                   | 451,2     | 14,5      |



# 4" 1 Phase 3-wire Motors

## High Thrust

### Submersible Motors

#### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The single phase 3-wire motor has been designed for highest achievable starting torque and shaft power from single phase power supplies. It is therefore ideally suited for applications where starting torque is paramount and 3 phase motors cannot be used. It should ideally be combined to the Franklin Electric 3-wire control boxes for maximum system performance, protection and warranty.

#### Product features

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

#### Brackish Water version Specifications:

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life..

#### Technical Specification

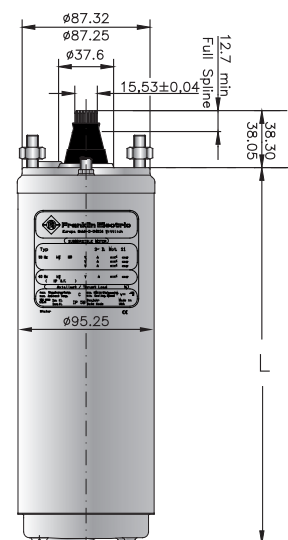
- Motor range: 2,2 – 3,7kW
- Thrust capacity: 6500 N
- 4" NEMA flange
- Rotation: CCW facing shaft end
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Voltage tolerance 60Hz from nominal: ±10%
- Protection requirements: EN 60947-4-1

#### Options

- Motor cable VDE, KTW approved ( 1,5m; special lengths available)
- Motors with factory- installed lead in Single Packing
- Built in lightning arrestors
- Alternative material executions
- Motor complete in AISI 316SS with SiC seal



| 1~ 4" Encapsulated Motors<br>3 wire / 230 V / 50 Hz |                 |  |                       |                       |          |              |                        |                        |           |           |
|---|-----------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| P <sub>N</sub><br>[kW]                              | Thrust<br>F [N] | N <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
| 2,2   | 6500            | 2885                                   | 15,3                  | 74,5                  | 73       | 0,88         | 7,3                    | 15,0                   | 520,2     | 21,3      |
| 3,7   | 6500            | 2895                                   | 21,4                  | 101                   | 77       | 0,99         | 12,2                   | 17,6                   | 652,5     | 26,4      |





# 4" 3 Phase Motors Super Stainless

## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The three phase motor offers maximum life and highest efficiency under various load conditions. It should ideally be combined to the Franklin Electric SubStart/SubTronic3P control boxes for maximum system performance, protection and warranty.

### Product features

- Hermetically sealed stator with 316SS shell. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Heat Pump Motor-version Specifications

- Many modern heating systems extract heat that is stored in aquifer / river water. Such so-called two-pit or open systems require low-power, high efficiency 3-phase submersible motors. To meet the demands of this niche market, Franklin Electric has developed a special 4" encapsulated submersible motor range optimized for shallow settings and low power consumption available from 0,25kW to 1,1kW.

### Pollution Recovery Motor-version Specifications

- Fluorelastomere (Viton®) rubber parts
- Special Polyurethane (PUR) lead assemblies
- 304 graded stainless steel as standard, 316SS as an option



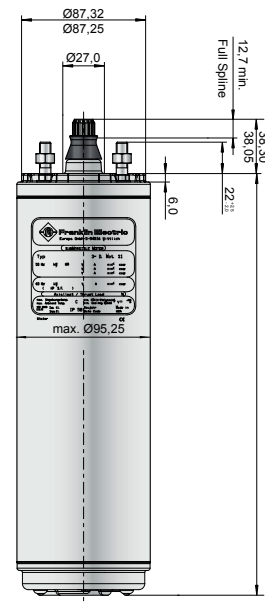
### Technical Specification

- Motor range: 0,37 – 3kW
- 4" NEMA flange
- Rotation: reversible
- Degree of protection: IP68
- Insulation: Cl.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance from nominal: -10% / +6%
- Protection requirements: EN 60947-4-1

### Options

- Built in lightning arrestors
- Motors in full 316SS
- Various cable lengths
- Special voltages
- Alternative material executions

| 3~ 4" Encapsulated Motors<br>400V / 50Hz |                 |                       |                       |                       |                       |          |              |                        |                        |           |           |
|--|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| P <sub>N</sub><br>[kW]                   | Thrust<br>F [N] | U <sub>N</sub><br>[V] | η <sub>N</sub><br>[%] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
| 0,37                                     | 4000            | 400                   | 2870                  | 1,10                  | 5,41                  | 66       | 0,74         | 1,22                   | 3,00                   | 237,2     | 6,05      |
| 0,55                                     | 4000            | 400                   | 2870                  | 1,6                   | 7,4                   | 68       | 0,74         | 1,82                   | 4,20                   | 251,1     | 6,65      |
| 0,75                                     | 4000            | 400                   | 2865                  | 2,0                   | 10,6                  | 70       | 0,77         | 2,49                   | 6,70                   | 271,2     | 7,55      |
| 1,1                                      | 4000            | 400                   | 2850                  | 2,8                   | 16,0                  | 74       | 0,78         | 3,67                   | 11,33                  | 297,2     | 8,80      |
| 1,5                                      | 4000            | 400                   | 2855                  | 3,9                   | 20,7                  | 73       | 0,78         | 5,00                   | 14,10                  | 321,2     | 9,75      |
| 2,2                                      | 4000            | 400                   | 2845                  | 5,5                   | 29,8                  | 75       | 0,77         | 7,37                   | 22                     | 353,2     | 11,4      |
| 3,0                                      | 4000            | 400                   | 2845                  | 7,5                   | 42,0                  | 76       | 0,77         | 10,06                  | 31,93                  | 408,2     | 13,8      |





# 4" 3 Phase Solar Motors

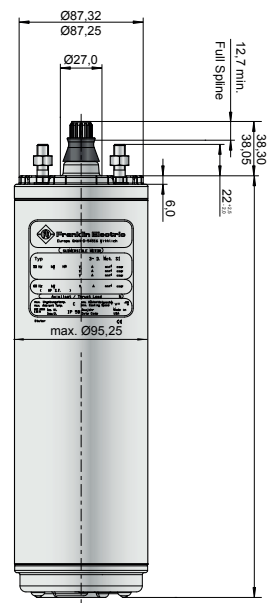
## Specification

- NEMA mounting design
- Stainless steel splined shaft
- Franklin StatorShield™ encapsulation system
- High-capacity “Kingsbury type” water lubricated thrust bearing
- Factory filled with Franklin’s sustainable water soluble fill solution
- Field replaceable lead using Franklin’s exclusive “Water Bloc” technology
- Pressure-equalizing diaphragm
- High efficiency electrical design for low operation costs
- All motors manufactured in ISO 9001 certified plants and 100% tested
- Drinking water approvals
- Optimized performance with Franklin Photon™ SolarPAK
- Ratings: 0.75 kW and 1.1 kW
- Thrust load: 4 kN
- Nominal ambient temperature: 30 °C with 0.08 m/s cooling flow
- Voltage tolerance: -10% / +6% (60 Hz)
- Protection IP68 / insulation class B
- Frequency of starts: max. 20 starts/ hour (with min. 3 minutes resting time)
- Special lead length up to 50 m
- Vertical and horizontal operation
- Rotation counter clock wise (reversible)
- All motors with factory installed leads



## 3~ 4" Encapsulated Solar Motors

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n<br>[min-1] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | M<br>[kg] |
|------------------------|-----------------|-----------------------|--------------|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| 0.75                   | 4000            | 100                   | 3370         | 6.9                   | 34.0                  | 74       | 0.85         | 2.1                    | 5.0                    | 271.2     | 7.25      |
| 1.1                    | 4000            | 200                   | 3400         | 5.0                   | 26.0                  | 76       | 0.83         | 3.1                    | 7.0                    | 297.2     | 8.55      |





# 4" 3 Phase Motors High Thrust

## Submersible Motors

### Quality in the Well

Franklin Electric 4" encapsulated submersible motors, built in ISO 9001/14001 certified facilities for outstanding performance in 4" or larger water wells.

The three phase motor offers maximum life and highest efficiency under various load conditions. It should ideally be combined to the Franklin Electric SubStart/SubTronic3P control boxes for maximum system performance, protection and warranty.

### Product features

- Hermetically sealed stator. Anti track, self healing stator resin prevents motor burn out, mechanically supports the winding and provides fast heat dissipation.
- High efficiency electrical design (low operation cost, cool running winding)
- Removable water bloc lead connector
- No-wear, water lubricated radial and thrust bearings for 100% maintenance free operation
- Non-contaminating FES 93 filling liquid
- Various agency approvals for use in drinking water

### Brackish Water version Specifications

- For use in water that has more salinity than fresh water, but not as much as seawater.
- The novel Franklin Electric Brackish Water Motor proposes a cost-effective solution wherever standard 4" motors are not giving sufficient service life.

### Pollution Recovery Motor-version Specifications

- Fluorelastomere (Viton®) rubber parts
- Special Polyuretane (PUR) lead assemblies
- 304 graded stainless steel as standard, 316SS as an option



### Technical Specification

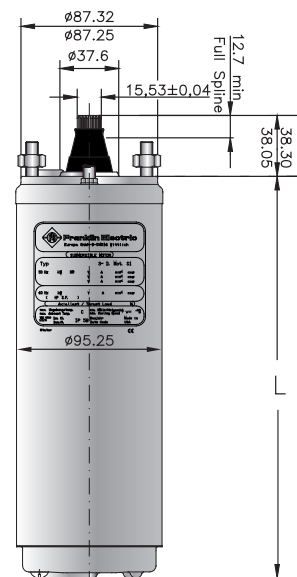
- 3 phase motor range: 2,2 – 9,3kW
- 4" NEMA flange
- Thrust capacity: 6500 N
- Rotation: reversible
- Degree of protection: IP68
- Insulation: CI.B
- Rated ambient temperature: 30°C
- Required cooling flow: min. 0,08m/s
- Max. starts/hr.: 20, equally distributed
- Mounting: vertical to horizontal, shaft upwards
- Voltage tolerance 50Hz from nominal: -10% / +6%
- Voltage tolerance 60Hz from nominal: ±10%
- Protection requirements: EN 60947-4-1

### Options

- Motor cable VDE / ACS / KTW approved (1,5m; 2,5m; special lengths available)
- Motors with factory- installed lead in Single Packing
- Special voltages on request
- Motor complete in AISI 316SS with SiC seal

3~ 4" Encapsulated High Thrust Motors  
400V / 50Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n <sub>n</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| 2,2                    | 6500            | 400                   | 2845                                   | 5,5                   | 29,8                  | 75       | 0,77         | 7,37                   | 22,0                   | 422,2     | 15,0      |
| 3,0                    | 6500            | 400                   | 2845                                   | 7,5                   | 42,0                  | 76       | 0,77         | 10,06                  | 31,93                  | 477,2     | 17,0      |
| 3,7                    | 6500            | 400                   | 2840                                   | 9,0                   | 52,3                  | 78       | 0,78         | 12,5                   | 41,5                   | 520,2     | 19,1      |
| 4,0                    | 6500            | 400                   | 2840                                   | 9,9                   | 57,0                  | 78       | 0,77         | 13,4                   | 44,0                   | 543,2     | 20,0      |
| 5,5                    | 6500            | 400                   | 2865                                   | 12,6                  | 77,2                  | 79       | 0,81         | 18,3                   | 56,5                   | 652,5     | 26,6      |
| 7,5                    | 6500            | 400                   | 2855                                   | 17,1                  | 99,3                  | 79       | 0,81         | 25,1                   | 73,1                   | 730,5     | 33,1      |
| 9,3                    | 6500            | 400                   | 2850                                   | 21,4                  | 96,9                  | 79       | 0,86         | 31,1                   | 45,0                   | 855,1     | 38,8      |



## 4" 3~ ENCAPSULATED PM MOTOR

### Specification

- 4" NEMA mounting design
  - Stainless steel splined shaft
  - StatorShield™ - Franklin encapsulation system
  - Factory filled with Franklin's non-toxic water soluble fill solution
  - High-capacity *Kingsbury type* water lubricated thrust bearing
  - Field replaceable lead using Franklin's exclusive *Water Bloc* technology
  - Pressure-equalizing diaphragm
  - High efficiency electrical design for low operation costs
  - All motors manufactured in ISO 9001 & 14001 certified plants and 100% tested
  - Drinking water approvals
- 
- Ratings: 0,55kW - 3,0kW; Thrust load 4kN
  - Ratings: 3,0kW - 4,0kW; Thrust load 6,5kN
  - Voltage: 220V / 400V
  - Voltage tolerance: -10% / +6% (50 Hz)
  - Nominal ambient temperature: 30°C with 0,08 m/s cooling flow
  - Protection IP68 / insulation class B
  - Frequency of starts: max. 20 ; with 3 min. rest period
  - Special lead lengths on request
  - Vertical and horizontal operation
  - All motors with factory installed leads 1,5 / 2,5 m



### 3~ Performance data 220V / 100 hz

| Motor MDL | P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n<br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub> / I <sub>N</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub> / T <sub>N</sub><br>[Nm] |
|-----------|------------------------|-----------------|-----------------------|---------------------------|-----------------------|--|----------|--------------|------------------------|---|
| 234 071   | 0,55                   | 4000            | 220                   | 3000                      | 1,8                   | 1                                      | 84,7     | 0,95         | 1,8                    | 1                                       |
|           | 0,75                   | 4000            | 220                   | 3000                      | 2,4                   | 1                                      | 85,0     | 0,95         | 2,4                    | 1                                       |
|           | 1,1                    | 4000            | 220                   | 3000                      | 3,8                   | 1                                      | 81,0     | 0,95         | 3,3                    | 1                                       |
| 234 072   | 1,1                    | 4000            | 220                   | 3000                      | 3,4                   | 1                                      | 86,4     | 0,96         | 3,5                    | 1                                       |
|           | 1,5                    | 4000            | 220                   | 3000                      | 4,8                   | 1                                      | 88,0     | 0,96         | 4,8                    | 1                                       |
|           | 2,2                    | 4000            | 220                   | 3000                      | 7,0                   | 1                                      | 87,0     | 0,96         | 6,9                    | 1                                       |
| 234 073   | 2,2                    | 4000            | 220                   | 3000                      | 6,8                   | 1                                      | 89,4     | 0,96         | 7,1                    | 1                                       |
|           | 3,0                    | 4000            | 220                   | 3000                      | 9,4                   | 1                                      | 89,0     | 0,97         | 9,5                    | 1                                       |
| 234 074   | 3,0                    | 6500            | 220                   | 3000                      | 9,0                   | 1                                      | 90,0     | 0,97         | 11,7                   | 1                                       |
|           | 3,7                    | 6500            | 220                   | 3000                      | 11,0                  | 1                                      | 89,7     | 0,97         | 12,0                   | 1                                       |
|           | 4,0                    | 6500            | 220                   | 3000                      | 12,0                  | 1                                      | 89,4     | 0,97         | 12,7                   | 1                                       |

### 3~ Performance data 380V / 100 hz

| Motor MDL | P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n<br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub> / I <sub>N</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub> / T <sub>N</sub><br>[Nm] |
|-----------|------------------------|-----------------|-----------------------|---------------------------|-----------------------|--|----------|--------------|------------------------|---|
| 234 062   | 1,1                    | 4000            | 380                   | 3000                      | 2,2                   | 1                                      | 86,4     | 0,96         | 3,5                    | 1                                       |
|           | 1,5                    | 4000            | 380                   | 3000                      | 2,6                   | 1                                      | 88,0     | 0,96         | 4,8                    | 1                                       |
|           | 2,2                    | 4000            | 380                   | 3000                      | 3,8                   | 1                                      | 87,0     | 0,96         | 6,9                    | 1                                       |
| 234 063   | 2,2                    | 4000            | 380                   | 3000                      | 3,5                   | 1                                      | 89,4     | 0,96         | 7,1                    | 1                                       |
|           | 3,0                    | 4000            | 380                   | 3000                      | 5,2                   | 1                                      | 89,0     | 0,97         | 9,5                    | 1                                       |
| 234 064   | 3,0                    | 6500            | 380                   | 3000                      | 5,0                   | 1                                      | 90,0     | 0,97         | 11,7                   | 1                                       |
|           | 3,7                    | 6500            | 380                   | 3000                      | 6,0                   | 1                                      | 89,7     | 0,97         | 12,0                   | 1                                       |
|           | 4,0                    | 6500            | 380                   | 3000                      | 6,5                   | 1                                      | 89,4     | 0,97         | 12,7                   | 1                                       |





## 4" HIGH EFFICIENCY SYSTEM (HES)

Packaged High Efficiency Submersible Borehole System and Solar System with energy savings up to 21 %\*

### FEATURES & BENEFITS

#### SUPERIOR EFFICIENCY

- Up to 15 points (21 %) improved motor efficiency\*
- Excellent partial load behaviour (SKU reduction)
- Due to the high motor efficiency, amps are significantly reduced, which might lead to smaller drop lead cross size and thus cost saving
- One-stop shop and perfectly matching components guarantee first-class performance/efficiency
- Power factor corrected input (No power compensation needed)

#### EASY INSTALLATION

- Easy system set-up through tailored pre-settings and Mobile App

#### INCREASED LIFETIME

- Incorporated Soft start and protection features (no additional investment)
- Speed control (Optimum aggregate operation - pump matches system any time)

#### UP-TO-DATE CONNECTIVITY

- Factory-featured with Bluetooth 4.0 Connectivity
- Remote control and maintenance via Mobile App

#### PACKAGED DEAL

- 4" synchronous submersible NEMA motor
- 4" submersible pump
- Variable frequency drive
- Matching output filter for 400 V systems



## 4" HIGH EFFICIENCY SYSTEM (HES)

Packaged High Efficiency Submersible Borehole System and Solar System with energy savings up to 21 %\*

### SPECIFICATION

- Motor range: 1.1 / 2.2 / 3.0 / 4.0 kW (50 Hz - 3000 rpm)
- Motor range: 1.2 / 2.5 / 3.4 / 4.6 kW (60 Hz - 3600 rpm)
- System Power Supply: 220 V - 400 V  $\pm$  10 %
- Frequency: 50 Hz - 60 Hz  $\pm$  2 %
- Nominal ambient temperature: max. 30 °C
- Protection IP68, insulation class Y
- Vertical and horizontal operation
- 230 V kits without additional output filter

### OPTIONS

- Special Voltages
- Higher-graded material: 316SS
- Sinus Output filters in IP00 for 400 V systems
- VFD IP21 - 400 V (on request)



Remote control and maintenance via Mobile App



# 6" Encapsulated Motors

Standard:



Optional:



## Submersible Motors

### Quality in the Well

These 6" encapsulated motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 6" diameter or larger water wells.

Water lubricated thrust and radial bearings enable a maintenance free operation. A special diaphragm ensures pressure compensation inside the motor. The motor is filled with a special FES91 fluid, providing frost protection down to -15°C storage temperature. The Sand fighter® SiC seal system is standard.

### Product features

- Hermetically sealed stator, anti track, self healing stator resin prevents motor burn out
- 37 and 45kW up to 50°C ambient temperature
- Removable "Water Bloc" lead connector
- Cable material according to drinking water regulations (KTW approved)
- „Sand fighter“ Motor with SiC-Mechanical Seal
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested
- Max. storage temperature -15°C - + 60°C
- Non contaminating FES91 -filling
- 45kN High Thrust Version on request (standard in 37kW and 45kW motors)

### Technical Specification

Standard Motor:

- 4 ... 45 kW
- 6" NEMA flange
- Protection: IP 68
- Starts per hour: 20
- Installation: vertical/horizontal
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to DIN 60947-4-1
- Insulation: Class F
- YΔ - start (pos. of cables 90°)
- „Sand fighter“ Motor with SiC-Mechanical Seal
- Rated ambient temperature: 4- 30kW up to 30°C; 37 & 45 kW up to 50°C
- Cooling flow: min. 0,16 m/s
- Motor lead in 4m length (KTW approved)

### Options

- Other voltages
- 45kN High Thrust Version on request (standard in 37kW and 45kW motors)
- Motors complete in 304SS and 316 SS
- PT 100 temperature sensor (sold separately)
- Special Lead lengths up to 50m
- Built-in PTC temperature sensor
- Built-in SubMonitor Transmitter (standard for 37&45kW)

### 6" Encapsulated Motors Standard

3~ / 400 V / 50 Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | n <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η    | cos φ | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|--|-----------------------|-----------------------|------|-------|------------------------|------------------------|-----------|-----------|
| 4,0                    | 15.500          | 2860                                   | 9,3                   | 43                    | 78,0 | 0,82  | 12,3                   | 20,2                   | 581,2     | 37,5      |
| 5,5                    | 15.500          | 2870                                   | 12,5                  | 64                    | 79,0 | 0,82  | 18,6                   | 35,0                   | 614,4     | 41,1      |
| 7,5                    | 15.500          | 2860                                   | 16,0                  | 83                    | 79,0 | 0,86  | 25,0                   | 47,7                   | 646,2     | 45,2      |
| 9,3                    | 15.500          | 2870                                   | 20,7                  | 112                   | 81,0 | 0,80  | 31,1                   | 68,2                   | 678,7     | 47,5      |
| 11,0                   | 15.500          | 2860                                   | 23,3                  | 129                   | 81,0 | 0,85  | 37,3                   | 78,3                   | 711,2     | 50,9      |
| 15,0                   | 15.500          | 2860                                   | 31,3                  | 169                   | 81,0 | 0,85  | 49,9                   | 107,3                  | 776,2     | 56,7      |
| 18,5                   | 15.500          | 2860                                   | 38,5                  | 231                   | 82,0 | 0,85  | 62,4                   | 154,6                  | 841,5     | 63,3      |
| 22,0                   | 15.500          | 2860                                   | 45,3                  | 268                   | 83,0 | 0,86  | 74,7                   | 177,6                  | 906,5     | 69,3      |
| 30,0                   | 27.500          | 2860                                   | 63,5                  | 393                   | 83,0 | 0,84  | 99,4                   | 263,1                  | 1036,6    | 83,9      |
| 37,0                   | 45.000          | 2875                                   | 79,0                  | 411                   | 81,0 | 0,85  | 123,6                  | 280,8                  | 1476,7    | 140       |
| 45,0                   | 45.000          | 2875                                   | 95,2                  | 509                   | 82,0 | 0,84  | 148,4                  | 332,3                  | 1629,2    | 156       |





# 6" Encapsulated Motors „HighTemp 90°C“

**Standard:** 

**Optional:** 



## Submersible Motors

### Quality in the Well

These 6" encapsulated motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 6" diameter or larger water wells with ambient temperature up to 90°C.

Water lubricated thrust and radial bearings enable a maintenance free operation. A special diaphragm ensures pressure compensation inside the motor. The motor is filled with a special FES92 fluid, providing frost protection down to -15°C storage temperature.

The Sand fighter<sup>®</sup> SiC seal system is standard.

### Product features

- Up to 90°C ambient temperature
- Increased thrust capacity up to 30°C
- No cooling flow in larger wells (12" / open reservoirs) up to 30°C ambient
- Hermetically sealed encapsulated stator, anti track, self healing stator resin
- Removable "Water Bloc" lead connector
- „Sand fighter“ Motor with SiC-Mechanical Seal
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested.
- Max. storage temperature -15°C - + 60°C
- High temperature leads
- Non contaminating FES92 -filling
- 45kN High Thrust version on request (standard in 22kW and 30kW motors)

### Technical Specification

#### Standard Motor:

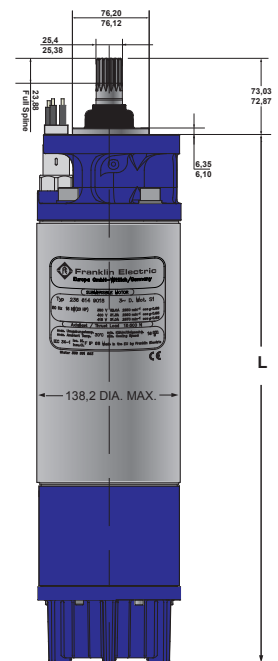
- 3,7 ... 30 kW
- 6" NEMA double flange
- Protection: IP 68
- Starts per hour: 20
- Installation: vertical/horizontal
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to DIN 60947-4-1
- Insulation: Class F
- Rated ambient temperature: 90°C
- Cooling flow: min. 0,16 m/s
- DOL / YΔ - start (pos. of cables 90°)
- Motor lead in 4m length

#### Options

- Other voltages
- 45kN High Thrust version on request (standard in 22kW and 30kW motors)
- Motors complete in 316 SS

### 6" Encapsulated Motors HighTemp 90°C 3~ / 400V / 50 Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| 3,7                    | 45.000          | 400                   | 2880                                   | 8,5                   | 52,5                  | 75       | 0,86         | 12,3                   | 31,4                   | 716       | 53        |
| 5,5                    | 45.000          | 400                   | 2890                                   | 12,3                  | 83,0                  | 77       | 0,86         | 18,3                   | 48,36                  | 752       | 59        |
| 7,5                    | 45.000          | 400                   | 2890                                   | 16,0                  | 110                   | 81       | 0,85         | 24,9                   | 76,6                   | 780       | 66        |
| 11,0                   | 45.000          | 400                   | 2890                                   | 24,2                  | 160                   | 80       | 0,82         | 36,6                   | 111,4                  | 846       | 71        |
| 15,0                   | 45.000          | 400                   | 2885                                   | 33,0                  | 205                   | 80       | 0,83         | 49,9                   | 161,3                  | 909       | 79        |
| 18,5                   | 45.000          | 400                   | 2890                                   | 40,5                  | 266                   | 83       | 0,82         | 61,5                   | 227,8                  | 1041      | 92        |
| 22                     | 45.000          | 400                   | 2885                                   | 48,0                  | 304                   | 81       | 0,85         | 74,0                   | 221,0                  | 1476,7    | 140       |
| 30                     | 45.000          | 400                   | 2885                                   | 64,5                  | 441                   | 83       | 0,82         | 98,7                   | 301,0                  | 1629,2    | 156       |





# 6" 3~ Encapsulated PM Motor

## Product Description

- Double flange NEMA mounting design
- Stainless Steel splined shaft
- StatorShield™ - Franklin encapsulation system
- Factory filled with Franklin's non-toxic water soluble fill solution
- High capacity Kingsbury type liquid lubricated thrust bearing
- Field replaceable lead using Franklin's exclusive Water Bloc technology
- Pressure-equalizing diaphragm, spring pre-loaded
- SandFighter™ sealing system with SIC mechanical seal and sand slinger
- High efficiency electrical design for low operation costs
- All motors manufactured in ISO 9001 certified plants and 100% tested
- Drinking water approvals

## Standard Specification

- Three-phase 4 - 45 kW, 380 V 50 Hz - nominal speed 3000 rpm
- Nominal ambient temperature: 30 °C with 0.16 m/s cooling flow
- Protection IP68 and insulation class F
- Frequency of starts: 6": 20 starts/ hour (with min. 3 minutes resting time)
- Vertical and horizontal operation
- All motors with factory installed leads

## OPTIONS

- Higher-graded materials 304SS and 316SS
- Retrofittable PT100
- Special lead length up to 50 m
- High-thrust design 45 kN
- 60 Hz electrical designs



## 3~ Performance data 380V / 100 hz

| Motor MDL | P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n<br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub> / I <sub>N</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub> / T <sub>N</sub><br>[Nm] |
|-----------|------------------------|-----------------|-----------------------|---------------------------|-----------------------|--|----------|--------------|------------------------|---|
| 236 080   | 4                      | 15.500          | 380                   | 3000                      | 9                     | 1                                      | 87,8     | 0,95         | 12,7                   | 1                                       |
|           | 5,5                    |                 |                       |                           | 10,9                  | 1                                      | 89,8     | 0,95         | 17,5                   | 1                                       |
|           | 7,5                    |                 |                       |                           | 13,9                  | 1                                      | 91       | 0,95         | 23,9                   | 1                                       |
|           | 9,3                    |                 |                       |                           | 17                    | 1                                      | 91,3     | 0,95         | 29,6                   | 1                                       |
|           | 11                     |                 |                       |                           | 20,3                  | 1                                      | 91,1     | 0,95         | 35                     | 1                                       |
| 236 084   | 13                     | 15.500          | 380                   | 3000                      | 25,5                  | 1                                      | 91,2     | 0,95         | 41,4                   | 1                                       |
|           | 15                     |                 |                       |                           | 28,7                  | 1                                      | 91,6     | 0,95         | 47,7                   | 1                                       |
|           | 18,5                   |                 |                       |                           | 34,5                  | 1                                      | 92,1     | 0,95         | 58,9                   | 1                                       |
|           | 22                     |                 |                       |                           | 37,2                  | 1                                      | 91,8     | 0,95         | 70                     | 1                                       |
| 236 086   | 26                     | 27.500          | 380                   | 3000                      | 53                    | 1                                      | 92,5     | 0,95         | 82,8                   | 1                                       |
|           | 30                     |                 |                       |                           | 60                    | 1                                      | 92,6     | 0,95         | 95,5                   | 1                                       |
|           | 37                     |                 |                       |                           | 72                    | 1                                      | 92,4     | 0,95         | 117,8                  | 1                                       |
|           | 45                     |                 |                       |                           | 89                    | 1                                      | 92       | 0,95         | 143,2                  | 1                                       |

Performance data are based on measurements with Franklin Electric original equipment!

# 8"

## Encapsulated Motors

Optional: **SAND FIGHTER**

Optional: **STAINLESS STEEL 316**



### Submersible Motors

#### Quality in the Well

These 8" encapsulated motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 8" diameter or larger water wells.

It is fitted with water lubricated radial and thrust bearings for maintenance-free operation. A special diaphragm ensures pressure compensation inside the motor. The motor is filled with a special FES91 fluid, providing frost protection down to -15°C storage temperature. The Sand fighter® SiC seal system is the option for sandy applications.

#### Product features

- Hermetically sealed stator, anti track, self healing stator resin prevents motor burn out
- Removable "Water Bloc" lead connector
- Cable material according to drinking water regulations (KTW approved)
- Sand slinger and Mechanical seal for high performance in sand
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested
- Max. storage temperature -15°C - + 60°C
- Non contaminating FES91 -filling

#### Technical Specification

Standard Motor:

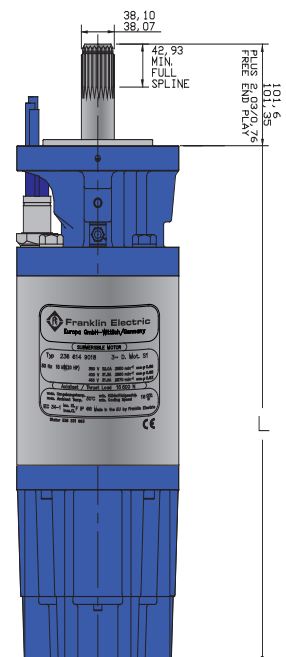
- 30 ... 150 kW
- 8" NEMA flange
- Protection: IP 68
- Starts per hour: 10
- Installation: vertical/horizontal
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to DIN 60947-4-1
- Insulation: Class F
- DOL /  $\Delta$  - start (pos. of cables 90°)
- Rated ambient temperature: 30°C
- Cooling flow: min. 0,16 m/s
- Built-in Subtrol Heat Sensor
- Motor lead in 8 m length (KTW approved)

#### Options

- Other voltages
- Motors complete in 316 SS
- PT 100 temperature sensor (sold separately)
- „Sand fighter“ Motor with SiC- Mechanical seal

**8" Encapsulated Motors Standard**  
3- /400 V / 50 Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | n <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η  | cos φ | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|--|-----------------------|-----------------------|----|-------|------------------------|------------------------|-----------|-----------|
| 30                     | 45000           | 2900                                   | 61                    | 418                   | 86 | 0,84  | 97                     | 255                    | 925       | 145       |
| 37                     | 45000           | 2920                                   | 74                    | 534                   | 87 | 0,86  | 121                    | 295                    | 1000      | 157       |
| 45                     | 45000           | 2920                                   | 89                    | 645                   | 87 | 0,85  | 145                    | 395                    | 1077      | 172       |
| 55                     | 45000           | 2920                                   | 108                   | 862                   | 88 | 0,87  | 182                    | 563                    | 1204      | 202       |
| 75                     | 45000           | 2925                                   | 151                   | 1157                  | 87 | 0,83  | 242                    | 561                    | 1394      | 240       |
| 93                     | 45000           | 2930                                   | 190                   | 1332                  | 87 | 0,83  | 302                    | 567                    | 1748      | 318       |
| 110                    | 45000           | 2930                                   | 222                   | 1597                  | 88 | 0,84  | 363                    | 769                    | 1976      | 381       |
| 130                    | 45000           | 2920                                   | 252                   | 1738                  | 88 | 0,87  | 424                    | 927                    | 2179      | 420       |
| 150                    | 45000           | 2920                                   | 284                   | 1858                  | 88 | 0,88  | 485                    | 1034                   | 2408      | 494       |





# 8" Encapsulated Motor „HighTemp 75°C“

Standard:



Optional:



## Submersible Motors

### Quality in the Well

These 8" encapsulated motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 8" diameter or larger water wells with ambient temperature up to 75°C. It is fitted with water lubricated radial and thrust bearings for maintenance-free operation. The motor is filled with a special FES92 fluid, providing frost protection down to -15°C storage temperature. A special diaphragm ensures pressure compensation inside the motor. The Sand fighter® SiC seal system is standard.

### Technical Specification

Standard Motor:

- 30 ... 110 kW
- 8" NEMA double flange
- Protection: IP 68
- Starts per hour: 10
- Installation: vertical/horizontal
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to DIN 60947-4-1
- Insulation: Class F
- Rated ambient temperature: 75°C
- Cooling flow: min. 0,16 m/s
- DOL / YΔ - start (pos. of cables 90°)
- Motor lead in 4m length

### Product features

- Up to 75°C ambient temperature
- Increase thrust capacity up to 30°C
- No cooling flow in larger wells (open reservoirs) up to 30°C ambient
- Hermetically sealed encapsulated stator, anti track, self healing stator resin
- Removable "Water Bloc" lead connector
- „Sand fighter“ Motor with SiC-Mechanical Seal
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested.
- Max. storage temperature -15°C - + 60°C
- High temperature leads
- Non contaminating FES 92 filling

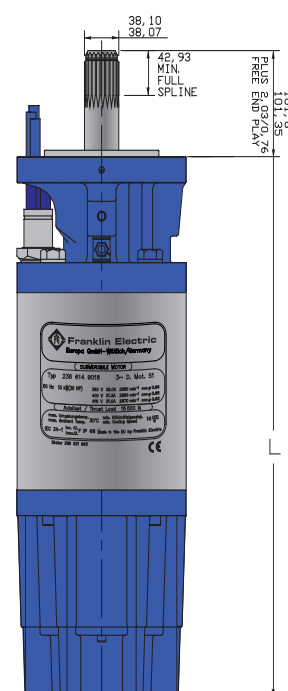
### Options

- Other voltages
- Motors complete in 316 SS
- Motor lead in 8m length

### 8" Encapsulated Motors HighTemp 75

3~ / 400V / 50Hz

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|-----------------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| 30                     | 45000           | 400                   | 2930                                   | 65,5                  | 499                   | 80       | 0,83         | 97,8                   | 298                    | 1138      | 182       |
| 37                     | 45000           | 400                   | 2940                                   | 79,6                  | 692                   | 82       | 0,84         | 120                    | 398                    | 1265      | 207       |
| 45                     | 45000           | 400                   | 2945                                   | 93,1                  | 884                   | 84       | 0,84         | 146                    | 465                    | 1455      | 252       |
| 56                     | 45000           | 400                   | 2930                                   | 115                   | 927                   | 84       | 0,85         | 182                    | 526                    | 1748      | 318       |
| 75                     | 45000           | 400                   | 2935                                   | 151                   | 1254                  | 86       | 0,85         | 244                    | 695                    | 1976      | 382       |
| 93                     | 45000           | 400                   | 2925                                   | 186                   | 1482                  | 86       | 0,86         | 304                    | 949                    | 2179      | 421       |
| 110                    | 45000           | 400                   | 2935                                   | 224                   | 1690                  | 86       | 0,85         | 358                    | 1002                   | 2408      | 473       |





# 6"

## Rewindable Motor

**Standard:**



**Optional:**



### Submersible Motors

#### Quality in the Well

These 6" rewindable motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 6" diameter or larger water wells. Water lubricated thrust and radial bearings enable a maintenance free operation. A special diaphragm ensures pressure compensation inside the motor. The motor is filled with a special FES93 fluid, providing frost protection down to -15°C storage temperature.

The Sand fighter® SiC seal system is the option for sandy applications. For applications in aggressive media, motors made of 316SS and 904L are available.

#### Product features

- Cable material according to drinking water regulations (KTW approved)
- Sand slinger and mechanical seal for high performance in sand
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested
- Max. storage temperature -15°C - +60°C
- Design for retrofitable PT100 sensor
- Approved Franklin Electric „Kingsbury Type“ thrust bearing
- Non contaminating FES 93 -filling
- Sand fighter® SiC seal system is standard
- Standard motors in complete 304SS

#### Technical Specification

Standard Motor:

- 4,0 - 37,0kW
- 6" NEMA flange with Studs (M 12)
- Protection: IP 68
- Starts per hour: max. 20
- Installation position: vertical / horizontal (**37 kW** motors may not be installed horizontally)
- Motor Lead in 4m length (KTW approved)
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to EN 60947-4-1
- YΔ - start (pos. of cables 90°)
- Standard motor with PVC winding insulation (37kW in standard with PE2/PA insulation) for max. ambient temp. of 30°C with a min. cooling flow:

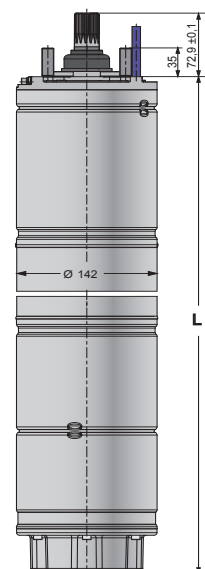
$$\begin{aligned} 4 \text{ kW} - 15 \text{ kW} & \quad v = 0,2 \text{ m/s} \\ 18,5 \text{ kW} - 37 \text{ kW} & \quad v = 0,5 \text{ m/s} \end{aligned}$$

#### Options

- Other voltages
- Motors in 316 SS and 904 L
- Motors up to 30kW with PE2/PA winding insulation for max. ambient temp. of 50°C at the same cooling conditions as standard (37 kW max. 45°C)
- PT 100 temperature sensor (sold separately)
- Lead in different lengths up to 50m

**6" Rewindable Motors**  
3~ /400 V / 50 HZ

| P <sub>N</sub><br>[kW] | Thrust<br>F [N] | n <sub>N</sub><br>[min-1] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
|------------------------|-----------------|---------------------------|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| <b>4</b>               | 15500           | 2930                      | 10,6                  | 51                    | 0,76     | 0,73         | 13,1                   | 17,3                   | 679       | 43        |
| <b>5,5</b>             | 15500           | 2890                      | 13,3                  | 51                    | 0,76     | 0,81         | 18,2                   | 17,3                   | 679       | 43        |
| <b>7,5</b>             | 15500           | 2880                      | 17,7                  | 63                    | 0,77     | 0,82         | 24,8                   | 21,5                   | 699       | 45        |
| <b>9,3</b>             | 15500           | 2870                      | 21,4                  | 78                    | 0,78     | 0,82         | 31,0                   | 29,0                   | 729       | 48        |
| <b>11</b>              | 15500           | 2880                      | 25,2                  | 98                    | 0,79     | 0,83         | 36,4                   | 35,3                   | 759       | 51        |
| <b>13</b>              | 15500           | 2900                      | 29,6                  | 125                   | 0,80     | 0,81         | 42,8                   | 50,3                   | 809       | 56        |
| <b>15</b>              | 15500           | 2890                      | 33,1                  | 148                   | 0,81     | 0,83         | 49,4                   | 60,4                   | 854       | 61        |
| <b>18,5</b>            | 15500           | 2880                      | 42,0                  | 182                   | 0,81     | 0,80         | 61,2                   | 84,3                   | 899       | 65        |
| <b>22</b>              | 15500           | 2900                      | 49,0                  | 231                   | 0,82     | 0,80         | 72,5                   | 102,2                  | 989       | 74        |
| <b>26</b>              | 15500           | 2900                      | 56,7                  | 284                   | 0,83     | 0,83         | 85,6                   | 134,7                  | 1094      | 85        |
| <b>30</b>              | 27500           | 2910                      | 66,4                  | 347                   | 0,83     | 0,80         | 98,4                   | 151,0                  | 1194      | 95        |
| <b>37</b>              | 27500           | 2900                      | 81,9                  | 433                   | 0,83     | 0,80         | 121,6                  | 215,8                  | 1274      | 102       |





# 6" High Efficiency System

In consideration of environmental relief and energy saving Franklin Electric developed a High Efficiency Submersible Borehole System, consisting of a synchronous 6" Submersible motor associated variable frequency drive, output filter and submersible pump.

## System Product features

- Standard Motor in full 304SS
- One-stop shop – perfectly matching components guarantee first class performance
- Up to 20% energy saving\*
  - ⇒ System payback < 2 years
- Up to 13% improved motor efficiency (system up to 11%) with excellent partial load behaviour\*
  - ⇒ SKU Reduction
- Significant lower motor heat rise
  - ⇒ Increased lifetime
- Higher power density\*
  - ⇒ Lightweight
- Easy installation/ set-up due to tailored pre-setting, user interface and software
- Speed control
  - ⇒ Optimum aggregate operation - pump matches system any time
- Incorporated Soft start and protection features
  - ⇒ Increased lifetime
  - ⇒ No additional investment
- Reduced amps
  - ⇒ Smaller drop lead cross size
- Top class protection with Electronics in IP66/54\*\*
  - ⇒ Easy retrofit - no additional cabinet cost
- Power factor corrected input
  - ⇒ No power compensation needed
- Communication Modbus (RS485 and Ethernet)

\*In comparison to current asynchronous technology

\*\*Alternative Electronics in IP21/00 for cabinet assembly available

## Technical System Specification

- Rating: 4 - 37kW
- Power Supply:      Voltage 400V +/- 10%  
                                 Frequency 50Hz +/- 6%

## System Options

- Plug-in card 6x DI/DO
- Plug-in card PT100
- Plug-in card 1x AI & 2x AO
- Plug-in card Profibus
- Power Supply: 200V & 500V
- Sinus output filters in IP54 and IP00
- PT100 protection
- Motors in 316SS and 904L



## High Efficiency Motors 304SS

### Motor Features:

- Standard Motor complete in 304SS
- Motors also in 316SS and 904L available
- PE2/PA winding as a standard
- SandFighter® SIC seal system
- Easy rewinding - winding housings removable
- Non-contaminating FES93 filling
- All motors pre-filled and 100% tested
- Max. storage temperature -15 ... +60°C
- Drinking water approved (KTW, ACS)



## Variable Speed Drive (VFD)

### VFD Features:

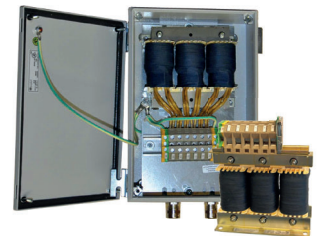
- Supports induction and permanent magnet motors
- Top class protection IP66 with Aluminium die casting powder coated enclosure . Alternative in IP21 with plastic enclosure
- Optimized for submersible permanent motor feeding – first class performance (Tailored pre-setting, user interface and software)



## Output Filter

### Output Filter Features:

- du/dt filter for lead lengths up to 120m, for lead lengths >120m please consult Franklin Electric.
- filter available in IP54 and IP00
- Optimized for submersible permanent motor feeding – first class performance



## Pumps

For any pump support please refer to:

<http://www.franklinwater.eu>





# 8" Rewindable Motor

Standard:



Optional:



## Submersible Motors

### Quality in the Well

These 8" rewindable motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 8" diameter or larger water wells. It is fitted with water lubricated radial and thrust bearings for maintenance-free operation. The motor is filled with a special FES93 fluid, providing frost protection down to -15°C storage temperature. A special diaphragm ensures pressure compensation inside the motor. The Sand fighter® SiC seal system is standard. For applications in aggressive media, motors made of 316SS and 904L are available.

### Technical Specification

Standard Motor:

- 30,0 - 93,0kW
- 8" NEMA flange
- Protection: IP 68
- Starts per hour: max. 10
- Installation position: vertical / horizontal (**93 kW** motors may not be installed horizontally)
- Motor Lead in 6 m length (KTW approved)
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [(380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to EN 60947-4-1
- DOL / YΔ - start (pos. of cables 90°)
- Standard motor with PVC winding insulation
- for max. ambient temp. of 30°C with a min. cooling flow:  
30 kW - 52 kW  $v = 0,2$  m/s  
55 kW - 93 kW  $v = 0,5$  m/s

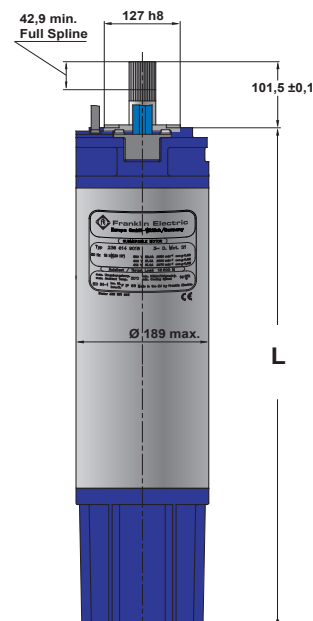
### Product features

- Easy to assemble with double flange
- Cable material according to drinking water regulations (KTW approved)
- Sand fighter® SiC seal system for high performance in sand
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested
- Max. storage temperature -15°C - + 60°C
- Design for retrofitable PT100 sensor
- Non contaminating FES 93 filling

### Options

- Other voltages
- Motors in complete 316 SS and 904 L
- YΔ - start (pos. of cables 90°)
- PE2/PA winding insulation for max. ambient temp. of 50°C at the same cooling conditions as standard
- PT 100 temperature sensor (sold separately)
- Lead in different lengths up to 50m

| 8" Rewindable Motors<br>3~/400 V / 50 Hz |                 |  |                       |                       |          |              |                        |                        |           |           |
|--|-----------------|--|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| P <sub>N</sub><br>[kW]                   | Thrust<br>F [N] | n <sub>N</sub><br>[min <sup>-1</sup> ] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
| 30                                       | 45 000          | 2900                                   | 60                    | 318                   | 0,84     | 0,89         | 99                     | 141                    | 1140      | 140       |
| 37                                       | 45 000          | 2900                                   | 76                    | 400                   | 0,84     | 0,86         | 122                    | 176                    | 1140      | 140       |
| 45                                       | 45 000          | 2910                                   | 90                    | 520                   | 0,86     | 0,86         | 148                    | 241                    | 1230      | 156       |
| 52                                       | 45 000          | 2910                                   | 103                   | 608                   | 0,86     | 0,87         | 175                    | 318                    | 1340      | 179       |
| 55                                       | 45 000          | 2915                                   | 110                   | 660                   | 0,86     | 0,86         | 181                    | 340                    | 1340      | 179       |
| 60                                       | 45 000          | 2910                                   | 116                   | 725                   | 0,87     | 0,88         | 197                    | 357                    | 1470      | 198       |
| 67                                       | 45 000          | 2910                                   | 133                   | 797                   | 0,87     | 0,86         | 220                    | 359                    | 1470      | 198       |
| 75                                       | 45 000          | 2910                                   | 148                   | 942                   | 0,87     | 0,87         | 246                    | 472                    | 1560      | 215       |
| 83                                       | 45 000          | 2920                                   | 160                   | 1077                  | 0,88     | 0,88         | 273                    | 544                    | 1560      | 247       |
| 93                                       | 45 000          | 2920                                   | 183                   | 1276                  | 0,88     | 0,86         | 305                    | 626                    | 1740      | 247       |





# 8" High Efficiency System



Franklin Electric is pleased to introduce the extended power range up to 150kW for its High Efficiency Submersible Borehole systems (HES). The system consists of an 8" synchronous submersible NEMA motor with associated variable frequency drive and matching output filter.

Ever since their introduction, our 6" HES have proven their world-class efficiency in more than 400 applications to date, saving up to 20% of electrical energy when compared to standard asynchronous motor system.

## System Product advantages:

- One-stop shop - perfectly matching components guarantee first class performance/ efficiency
  - ⇒ System payback < 2 years
- Up to 8% improved motor efficiency with excellent partial load behaviour
  - ⇒ SKU Reduction
- Significant lower motor heat rise
  - ⇒ Increased lifetime
- Higher power density
  - ⇒ Lightweight
- Easy set-up due to tailored pre-setting, user interface and own Franklin Electric software
- Speed control
  - ⇒ Optimum aggregate operation - pump matches system any time
- Incorporated Soft start and protection features
  - ⇒ Increased lifetime
  - ⇒ No additional investment
- Reduced amps
  - ⇒ Smaller drop lead cross size
- Power factor corrected input
  - ⇒ No power compensation needed
- Communication Modbus (RS485, Ethernet and optional Profibus)

## Technical System Specification

- Rating: 75 / 100 / 150kW
- Power Supply: Voltage 400V +/- 10%  
Frequency 50Hz +/- 6%

## System Options

- Plug-in card 6x DI/DO - 308 170 201
- Plug-in card PT100 - 308 170 202
- Plug-in card Profibus - 308 170 203
- Plug-in card 1x AI & 2x AO - 308 170 206
- Other voltages
- Sinus output filters in IP54 and IP00
- PT100 protection
- Motors in 316SS and 904L



## High Efficiency Motors 304SS

### Motor Features:

- 75 / 100 / 150kW
- Power supply 400V/100Hz
- 8" NEMA flange
- 8" Motor in 304SS / CI (Powder Coated)/316SS / 904L
- PE2/PA winding as a standard
- SandFighter® SIC seal system
- Non-contaminating FES93 filling
- All motors pre-filled and 100% tested
- Max. storage temperature -15 ... +60°C
- Drinking water approved



## Variable Speed Drive (VFD)

### VFD Features:

- Supports induction and permanent magnet motors
- Top class protection IP21 with plastic enclosure
- Optimized for submersible permanent motor feeding – first class performance (Tailored pre-setting, user interface and software)



## Output Filter

### Output Filter Features:

- dV/dt filter for lead lengths up to 120m, for lead lengths >120m please consult Franklin Electric.
- filter available in IP54 and IP00
- Optimized for submersible permanent magnet motor feeding



## Pumps

For any pump support please refer to:

<http://www.franklinwater.eu>



# 10" Rewindable Motor

**Standard:**



**Optional:**



## Submersible Motors

### Quality in the Well

These 10" rewindable motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 10" diameter or larger water wells.

It is fitted with water lubricated radial and thrust bearings for maintenance-free operation. The motor is filled with a special FES93 fluid, providing frost protection down to -15°C storage temperature.

A special diaphragm ensures pressure compensation inside the motor. The Sand fighter® SiC seal system is standard. For applications in aggressive media, motors made of 316SS and 904L are available.

### Technical Specification

Standard Motor:

- 85,0 - 185,0kW
- 10" flange
- Protection: IP 68
- Starts per hour: max. 10
- Installation position: vertical / horizontal (**185 kW** motors may not be installed horizontally)
- Motor Lead in 6 m length (KTW approved)
- Standard Voltage: 380-415V/50Hz, 460V/60Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to EN 60947-4-1
- DOL / YΔ - start (pos. of cables 90°)
- Standard motor with PVC winding insulation for max. ambient temperature of **25°C** with a min. cooling flow:  $v = 0,5 \text{ m/s}$

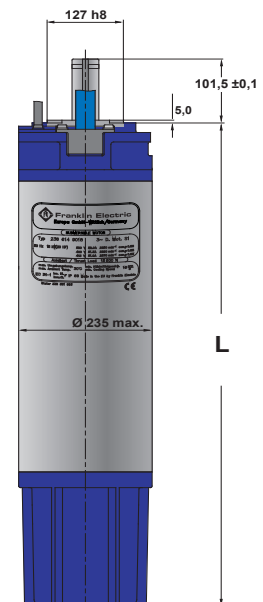
### Product features

- Easy to assemble with double flange
- Cable material according to drinking water regulations (KTW approved)
- Sand fighter® SiC seal system for high performance in sand
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested
- Max. storage temperature -15°C - + 60°C
- Design for retrofitable PT100 sensor
- Non contaminating FES 93 filling

### Options

- Other voltages
- Motors in complete 316 SS and 904 L
- PE2/PA winding insulation for max. ambient temp. of **45°C** at the same cooling conditions as standard
- PT 100 temperature sensor (sold separately)
- Lead in different lengths up to 50m

| 10" Rewindable Motors<br>3~/400 V / 50 Hz |                 |                               |              |              |               |                    |               |               |           |           |
|---|-----------------|-------------------------------|--------------|--------------|---------------|--------------------|---------------|---------------|-----------|-----------|
| $P_N$<br>[kW]                             | Thrust<br>F [N] | $n_N$<br>[min <sup>-1</sup> ] | $I_N$<br>[A] | $I_A$<br>[A] | $\eta$<br>[%] | $\cos \phi$<br>[%] | $T_N$<br>[Nm] | $T_A$<br>[Nm] | L<br>[mm] | m<br>[kg] |
| 85  | 60 000          | 2900                          | 174          | 828          | 0,85          | 0,85               | 280           | 316           | 1419      | 280       |
| 110                                       | 60 000          | 2920                          | 232          | 1158         | 0,86          | 0,82               | 360           | 467           | 1529      | 315       |
| 130                                       | 60 000          | 2920                          | 256          | 1344         | 0,88          | 0,86               | 425           | 546           | 1659      | 362       |
| 150                                       | 60 000          | 2920                          | 298          | 1590         | 0,87          | 0,85               | 491           | 635           | 1769      | 413       |
| 185                                       | 60 000          | 2920                          | 384          | 2148         | 0,88          | 0,81               | 605           | 1022          | 1919      | 449       |





# 12" Rewindable Motor

Standard:



Optional:



## Submersible Motors

### Quality in the Well

These 12" rewindable motors, manufactured in ISO 9001 certified facilities, are built for dependable operation in 12" diameter or larger water wells.

It is fitted with water lubricated radial and thrust bearings for maintenance-free operation. The motor is filled with a special FES93 fluid, providing frost protection down to -15°C storage temperature.

A special diaphragm ensures pressure compensation inside the motor. For applications in aggressive media, motors made of 316SS are available.

### Product features

- Easy to assemble with double flange
- Cable material according to drinking water regulations (KTW approved)
- Sand fighter® SiC seal system for high performance in sand
- High efficiency electrical design for low operation cost
- All motors prefilled and 100% tested
- Max. storage temperature -15°C - + 60°C
- Design for retrofitable PT100 sensor
- Non contaminating FES 93 filling

### Options

- Motors in complete 316SS
- 80kN thrust load
- Other voltages
- PT 100 temperature sensor (sold separately)
- Special lead lengths upon request

### Technical Specification

#### Standard Motor:

- 185kW - 400kW
- 12" flange
- Protection: IP 68
- Starts per hour: max. 5
- Installation position: vertical / horizontal
- Motor Lead in 6 m length (KTW approved)
- Standard voltage:
  - 380-415V/50Hz, 460V/60Hz
  - 500V/50Hz
  - 1000V/50Hz
- Voltage tolerance 50Hz: -10% / +6%  $U_N$  [380-415V = (380-10%) - (415+6%)]
- Voltage tolerance 60Hz:  $\pm 10\% U_N$
- Motor protection: Select thermal overloads according to EN 6047-4-1
- DOL / YΔ - start (pos. of cables 90°)
- 30°C ambient temperature with a min. cooling flow:  $v = 0,5 \text{ m/s}$

| 12" Rewindable Motors<br>3~/400 V / 50 Hz |                 |                       |                           |                       |                       |          |              |                        |                        |           |           |
|---|-----------------|-----------------------|---------------------------|-----------------------|-----------------------|----------|--------------|------------------------|------------------------|-----------|-----------|
| P <sub>N</sub><br>[kW]                    | Thrust<br>F [N] | U <sub>N</sub><br>[V] | n <sub>N</sub><br>[min-1] | I <sub>N</sub><br>[A] | I <sub>A</sub><br>[A] | η<br>[%] | cos φ<br>[%] | T <sub>N</sub><br>[Nm] | T <sub>A</sub><br>[Nm] | L<br>[mm] | m<br>[kg] |
| 185                                       | 60 000          | 400                   | 2940                      | 357                   | 1892                  | 87       | 0,87         | 600                    | 666                    | 1893      | 663       |
| 220                                       | 60 000          | 400                   | 2940                      | 418                   | 2257                  | 88       | 0,88         | 714                    | 850                    | 1893      | 663       |
| 250                                       | 60 000          | 400                   | 2935                      | 481                   | 2501                  | 88       | 0,88         | 812                    | 772                    | 1893      | 663       |
| 300                                       | 60 000          | 400                   | 2945                      | 551                   | 3085                  | 88       | 0,90         | 971                    | 913                    | 2043      | 726       |
| 350                                       | 60 000          | 400                   | 2930                      | 676                   | 3515                  | 87       | 0,88         | 1137                   | 1024                   | 2143      | 769       |
| 400                                       | 60 000          | 400                   | 2930                      | 750                   | 3600                  | 90       | 0,87         | 1301                   | 1093                   | 2193      | 794       |





# 4" HIGH EFFICIENCY SOLAR SYSTEM (HES)

Packaged High Efficiency Submersible Borehole Solar System with energy savings up to 21 %\*

## FEATURES & BENEFITS

### SUPERIOR EFFICIENCY

- Less panels, more water respectively
- Integrated voltage "boost" (up to 2.2 kW) significantly reduces number of solar panels
- Direct DC feeding
- MPPT algorithm maximises system performance
- Top class protection with Electronics in IP66 / 65  
No cabinet - no cooling fan / dust filter - no maintenance
- Backup Power supply / Direct AC feeding to maximize system runtime

### EASY INSTALLATION

- Easy system set-up through tailored pre-settings and Mobile App

### INCREASED LIFETIME

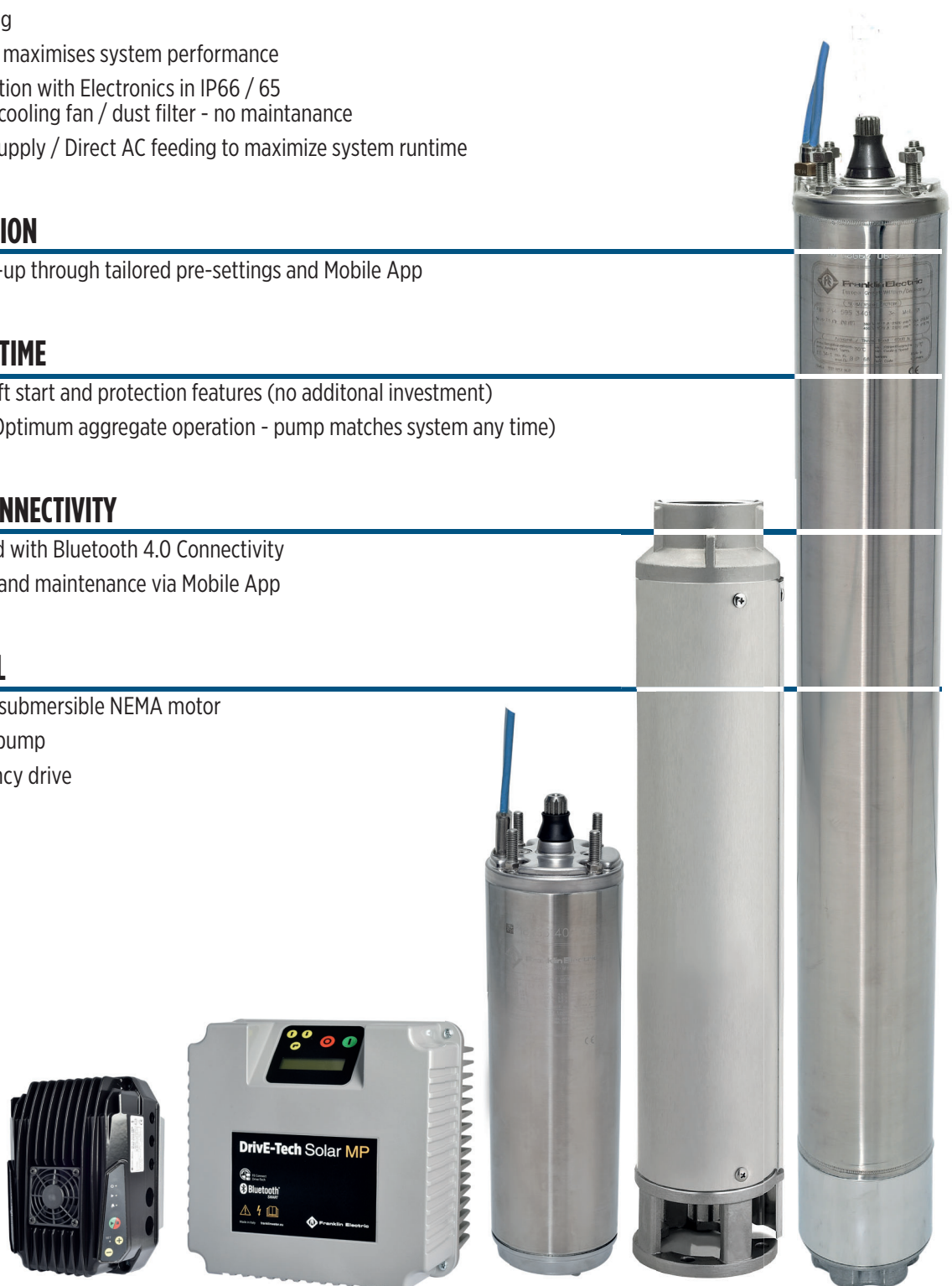
- Incorporated Soft start and protection features (no additional investment)
- Speed control (Optimum aggregate operation - pump matches system any time)

### UP-TO-DATE CONNECTIVITY

- Factory-featured with Bluetooth 4.0 Connectivity
- Remote control and maintenance via Mobile App

### PACKAGED DEAL

- 4" synchronous submersible NEMA motor
- 4" submersible pump
- Variable frequency drive



\* in comparison to current asynchronous technology

# 4" HIGH EFFICIENCY SOLAR SYSTEM (HES)

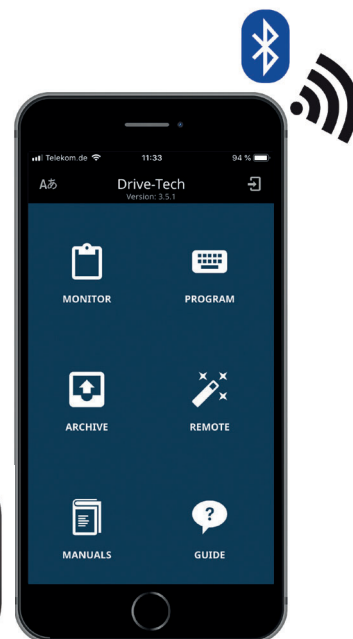
Packaged High Efficiency Submersible Borehole Solar System with energy savings up to 21 %\*

## SPECIFICATION

- Motor range: 1.1 / 2.2 / 3.0 / 4.0 kW (50 Hz - 3000 rpm)
- Motor range: 1.2 / 2.5 / 3.4 / 4.6 kW (60 Hz - 3600 rpm)
- System Power Supply Solar: 90 - 400 V / 160 - 650 V DC (AC Backup 90 - 265 V / 190 - 520 V)
- Frequency: 50 Hz - 60 Hz  $\pm$  2 %
- Nominal ambient temperature: max. 30 °C
- Protection IP68, insulation class Y
- Vertical and horizontal operation
- 230 V kits without additional output filter

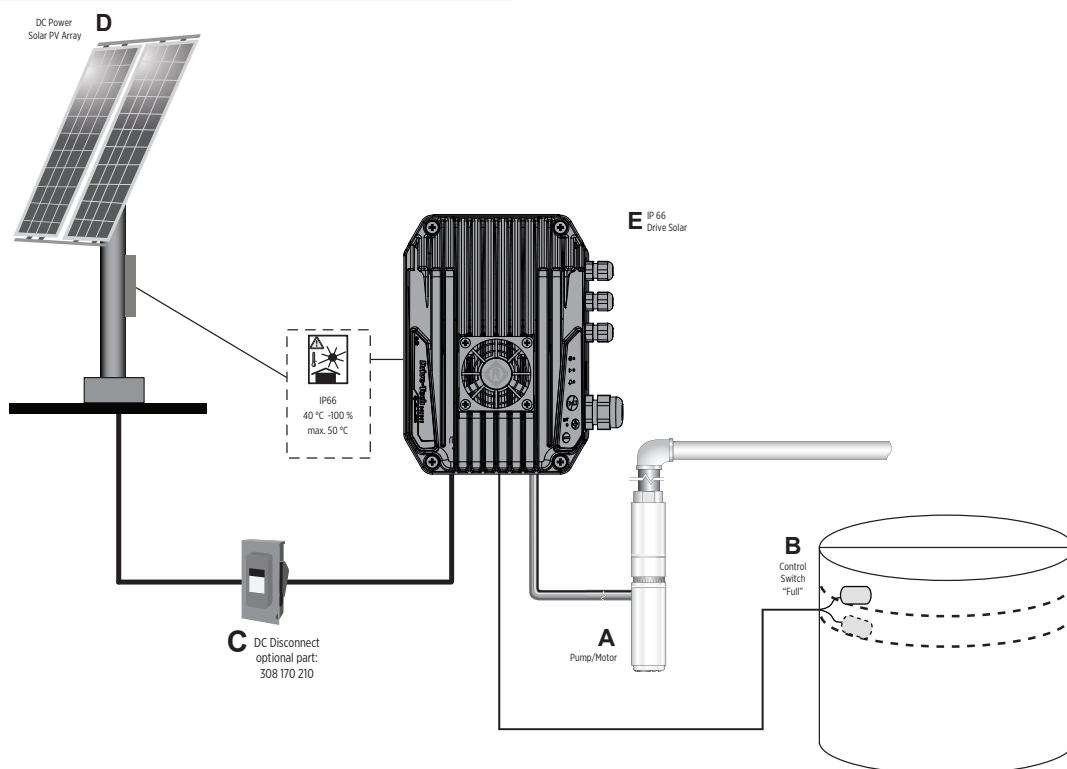
## OPTIONS

- Special Voltages
- Higher-graded material: 316SS



Remote control and maintenance via Mobile App

## SYSTEM INSTALLATION



- A. High Efficiency Motor and Pump
- B. Level Control Switch, not included (separate order 308 170 209)
- C. DC Disconnect, not included (separate order)
- D. Solar Array (not included)
- E. Drive-Tech mini Solar inverter

# 6" High Efficiency Solar System

Franklin Electric is pleased to announce the introduction of the extended SOLAR feature for its 6" High Efficiency Submersible Borehole systems (HES).

These systems, consisting of a full stainless, synchronous submersible NEMA motor associated with a variable frequency drive and matching output filter have proven their world-class efficiency in over 300 applications to date, saving up to 20% of electrical energy when compared to standard synchronous motor systems.

## System Product advantages

- One-stop shop – perfectly matching components guarantee first class performance / efficiency  
⇒ Less panels, more water respectively
- Direct DC feeding
- Special MPP algorithm for centrifugal borehole pumps
- Top class protection with Electronics in IP66/IP54  
⇒ No cabinet - no cooling fan/ dust filter - no maintenance
- GORE® vent  
⇒ No condensation
- Easy set-up due to tailored pre-setting, user interface and Franklin Electric software
- Reduced amps  
⇒ Smaller drop lead cross size
- Higher power density  
⇒ Lightweight
- Significant lower motor heat rise  
⇒ Increased lifetime
- Communication Modbus (RS485 and Ethernet)

- A. High Efficiency Motor and Pump
- B. IP66 HES Drive Solar
- C. OutputFilter
- D. Flow Switch
- E. Level Control Switch (not included)
- F. DC Disconnect (not included)
- G. Solar Array (not included)
- H. AC Alternative Power supply (not included)
- I. IP21 Solar Drive

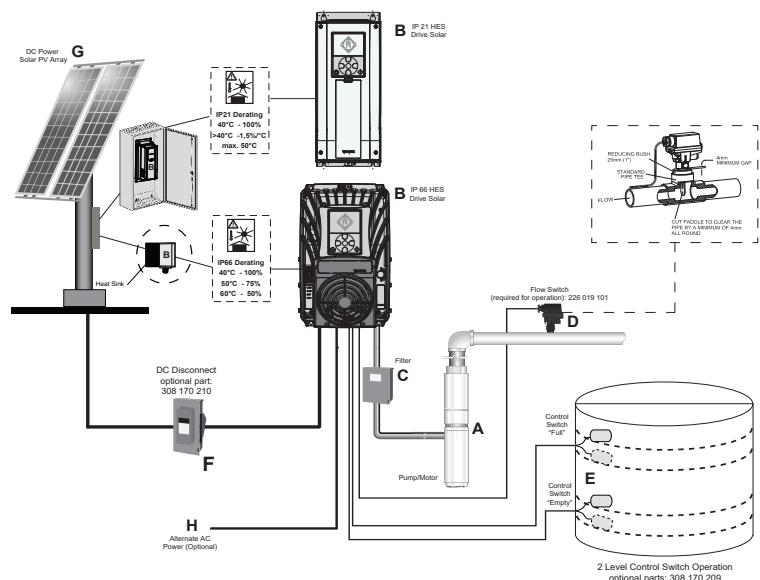


## Technical System Specification:

- Rating: 4 - 30kW
- Power Supply: Voltage 400 - 800V DC (min. starting voltage 440V)
- Frequency 30 -  $f_N$  (50 respectively 60Hz)

## System Options

- Plug-in card 6x DI/DO
- Plug-in card PT100
- Plug-in card Profibus
- Plug-in card 1x AI & 2x AO
- Other voltages
- Sinus output filters in IP54
- PT100 protection
- Motors in 316SS and 904L



To find the right System please use Selection & Payback link on: <http://www.franklinwater.eu>



## 6" High Efficiency Rewindable Motors

### Motor Features

- Rating 4 - 37kW
- Motor complete in 304SS, 316SS and 904L available
- PE2/PA winding as a standard
- SandFighter® SIC seal system
- Easy rewinding - winding housings removable
- Non-contaminating FES93 filling
- All motors pre-filled and 100% tested
- Max. storage temperature -15 ... +60°C
- Drinking water approved



## Variable Speed Drive (VFD)

### VFD Features

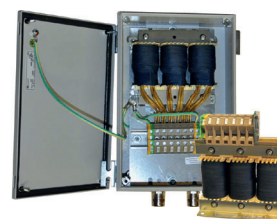
- Supports induction and permanent magnet motors
- Top class protection IP66 with Aluminium die casting powder coated enclosure . Alternative in IP21 with plastic enclosure
- Optimized for submersible permanent motor feeding – first class performance (Tailored pre-setting, user interface and software)



## Output Filter

### Features:

- du/dt filter for lead lengths up to 120m, for lead lengths >120m please consult Franklin Electric.
- filter available in IP54 and IP00
- Optimized for submersible permanent magnet motor feeding



## Flow Paddle Switch

The flow switch utilizes the force of liquid flow to propel its paddle and to detect the incoming flow or movement of the existing liquid in the pipe. A required Part of the 6" High Efficiency Solar System.



## Level Switch

A float switch is a device used to detect the level of liquid within a tank. A required Part of the 6" High Efficiency Solar System.



## DC Disconnect

To disconnect the drive even under load safely from the solar generator, Franklin Electric offers suitable DC disconnect switches for different power ratings.



## SS Pumps

For any pump support please refer to:

<http://www.franklinwater.eu>



# 8" High Efficiency Solar System

Franklin Electric is pleased to announce the introduction of the extended SOLAR feature for its 8" High Efficiency Submersible Borehole systems (HES).

These systems, consisting of a synchronous submersible NEMA motor associated with a variable frequency drive and matching output filter.



## System Product advantages:

- One-stop shop – perfectly matching components guarantee first class performance / efficiency
  - ⇒ Less panels, more water respectively
- Direct DC feeding
- Special MPP algorithm for centrifugal borehole pumps
- Easy set-up due to tailored pre-setting, user interface and Franklin Electric software
- Reduced amps
  - ⇒ Smaller drop lead cross size
- Higher power density
  - ⇒ Lightweight
- Significant lower motor heat rise
  - ⇒ Increased lifetime
- Communication Modbus (RS485 and Ethernet)

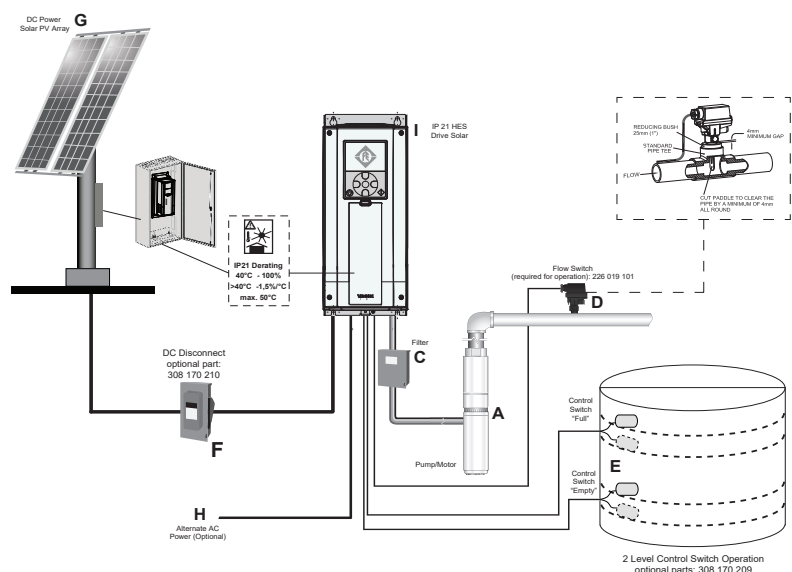
## Technical System Specification:

- Rating: 4 - 30kW
- Power Supply: Voltage 400 - 800V DC (min. starting voltage 440V)
- Frequency 30 -  $f_N$  (50 respectively 60Hz)

## System Options

- Plug-in card 6x DI/DO
- Plug-in card PT100
- Plug-in card Profibus
- Plug-in card 1x AI & 2x AO
- Other voltages
- Sinus output filters in IP21
- PT100 protection
- Motors in 316SS and 904L

- A. High Efficiency Motor and Pump
- C. OutputFilter
- D. Flow Switch
- E. Level Control Switch (not included)
- F. DC Disconnect (not included)
- G. Solar Array (not included)
- H. AC Alternative Power supply (not included)
- I. HES Drive Solar



To find the right System please use Selection & Payback link on: <http://www.franklinwater.eu>



## High Efficiency Motors 304SS

### Motor Features:

- 75 / 100 / 150kW
- Power supply 400V/100Hz
- 8" NEMA flange
- 8" Motor in 304SS / CI (Powder Coated)
- PE2/PA winding as a standard
- SandFighter® SIC seal system
- Non-contaminating FES93 filling
- All motors pre-filled and 100% tested
- Max. storage temperature -15 ... +60°C
- Drinking water approved



## Variable Speed Drive (VFD)

### VFD Features:

- Supports induction and permanent magnet motors
- Top class protection IP21 with plastic enclosure
- Optimized for submersible permanent motor feeding – first class performance (Tailored pre-setting, user interface and software)



## Output Filter

### Output Filter Features:

- dV/dt filter for lead lengths up to 120m, for lead lengths >120m please consult Franklin Electric.
- filter available in IP54 and IP00
- Optimized for submersible permanent magnet motor feeding



## Pumps

For any pump support please refer to:

<http://www.franklinwater.eu>



## FHOTON™ SOLARPAK - ALL-IN-ONE PACKAGE

The Photon™ SolarPAK Centrifugal is the system solution to your solar pumping requirements. By utilizing quality components, innovative thinking based on global market inputs, and a technical expertise in groundwater pumping, Franklin Electric has developed a rugged, high-output system which tackles the challenges of harsh and remote environments. No other system delivers the features, benefits, and reliability of Photon™ SolarPAK in just one package!

### FEATURES

- High-flow system for faster tank-fill and significant water output
- Proven motor and pump technology for long-term reliability
- Robust IP66, NEMA 4 enclosure minimizes impact from wildlife, insects, dust, and weather
- DC solar array
- Operating status indicated by multi-color LED
- Terminals provided for an optional data communications board
- Max Power Point Tracking (MPPT) 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 with no required maintenance
- Built-in diagnostics and protection
- CE, C-Tick, cULus and UL approved

### SOLARPAK CONTENTS

- Franklin Electric 4" submersible motor
- Franklin Electric 4" submersible pump
- Photon™ Solar controller
- Flow switch
- Variety of flow rates available: 17, 30, 67, 100, 117 lpm (1, 2, 4, 6, 7 m³/h)
- Motor and drive ratings available: 0.55 or 1.1 kW



### SOLAR CONTROLLER

|                         | 0.55 kW Model                                       | 1.1 kW Model         |
|-------------------------|---|----------------------|
| Controller Model No.    | 58101300086C-62IS000                                | 58101420086C-62IS002 |
| Output                  |   |                      |
| Max. Output Voltage     | 100V AC, 3-phase                                    | 200V AC, 3-phase     |
| Max. Amps (RMS)         | 8.6 A, each phase                                   | 6.8 A, each phase    |
| Output Frequency        | 20-60 Hz  |                      |
| Efficiency at Max Power | 98%   |                      |
| PV Source / Input       |   |                      |
| Max. Input Voltage      | *45 - 300 VDC                                       | **115 - 420 V DC     |
| Max. Amps Input         | 7.2 A DC, continuous                                | 6.2 A DC, continuous |
| Power at MPP            | Up to 1200 watts                                    | Up to 2000 watts     |
| VOC                     | 300 V   | 420 V                |
| For Use With            |   |                      |
| Franklin Electric Motor | 234 802 6700L                                       | 234 703 6700L        |
| Operating Conditions    |   |                      |
| Temperature Range       | -25 °C to 50 °C (40 °C max when using AC generator) |                      |
| Relative Humidity Range | 0 to 100% Condensing                                |                      |
| Enclosure Rating        | IP66  |                      |

\* 45 and \*\* 115 VDC for the 0.55 kW and 1.1 kW models respectively should not be interpreted as an adequate rated PV array output voltage for any installation. See the PV Solar Array Specifications and System Sizing program for indication of adequate array voltage to provide useful pumping capability.

## PHOTON™ SOLARPAK HR - ALL-IN-ONE PACKAGE

The Photon™ HR SolarPAK System features helical rotor pumps, as an addition to the current Photon SolarPAK product family. The helical rotor pump (sometimes called a progressive cavity or positive displacement pump) generates substantial water pressure at lower flows, providing water even during times of indirect sunlight. Since less energy is required, the Photon HR SolarPAK utilizes a minimum number of solar panels, making it ideal for applications with flexible water volume requirements.

### Features

- Four-inch NEMA standard construction dimensions
- Flex-shaft that allows for minimal radial wear to the motor
- Proprietary software provides increased dry-run and low-flow protection without the need for external devices
- Four-inch Franklin Electric motor
- Built-in check valve
- Pump upthrust washer serves as additional shaft protection from excessive wear in the event of reversed rotation
- Serviceability by pump and motor detaching when needed
- Unique HR Photon™ drive algorithm provides increased starting torque levels

### SolarPAK Contents

- Franklin Electric 4" submersible motor 0.75 kW / 1.1 kW
- Franklin Electric 4" submersible helical rotor pump 10, 25 or 50 lpm
- Photon™ Solar controller: 0.55 kW / 1.1 kW



### HR Solar Controller

|                         | 0.55 kW Model  | 1.1 kW Model         |
|-------------------------|--|----------------------|
| Controller Model No.    | 58101300086C-62IP000<br>58101300086C-62IP001         | 58101420086C-62IP002 |
| Output                  |  |                      |
| Max. Output Voltage     | 100V AC, 3-phase                                     | 200V AC, 3-phase     |
| Max. Amps (RMS)         | 8.6 A, each phase                                    | 6.8 A, each phase    |
| Output Frequency        | 20-50 Hz   |                      |
| Efficiency at Max Power | 98%  |                      |
| PV Source / Input       |  |                      |
| Max. Input Voltage      | *45 - 300 VDC  | **115 - 420 V DC     |
| Max. Amps Input         | 7.2 A DC, continuous                                 | 6.2 A DC, continuous |
| Power at MPP            | Up to 1200 watts                                     | Up to 2000 watts     |
| VOC                     | 300 V  | 420 V                |
| Operating Conditions    |  |                      |
| Temperature Range       | -25 °C to 50 °C (40 °C max. when using AC generator) |                      |
| Relative Humidity Range | 0 to 100% Condensing                                 |                      |
| Enclosure Rating        | IP66   |                      |

\* 45 and \*\* 115 VDC for the 0.55 kW and 1.1 kW models respectively should not be interpreted as an adequate rated PV array output voltage for any installation. See the PV Solar Array Specifications and System Sizing program for indication of adequate array voltage to provide useful pumping capability.





## FHOTON™ 3 - POWER EXTENSION UP TO 7.5 KW

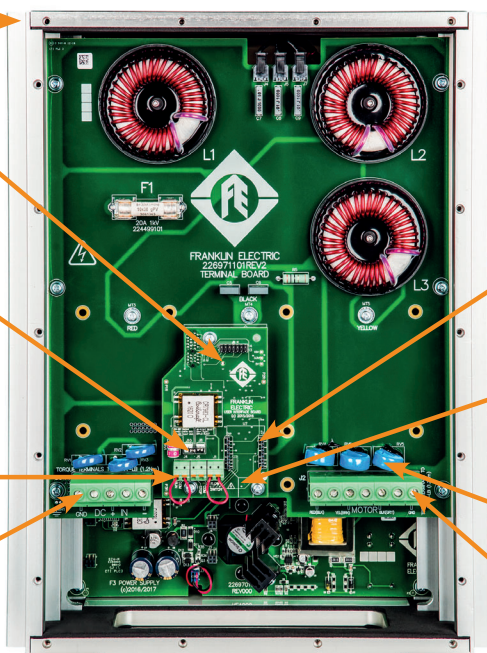
IP56 NEMA 4 enclosure  
for indoor/outdoor use

Operating status  
indicated by multi-color  
LED

Jumper section for single-  
or two-level control

Flow switch input to  
detect dry-run conditions  
for additional motor and  
pump protection

DC power supply input  
from the solar array

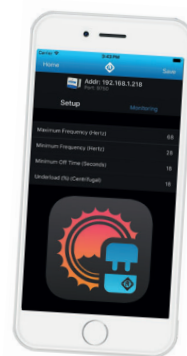


Terminals provided  
for optional data  
communication card via  
FE Connect

Contacts for up to two  
level-control switches

MOVs for additional  
lightning protection

Output connections for  
motor phases



### Features

- New Fhoton system covers all existing features of 0.5 and 1.1 kW Fhoton™
- Ideal design for performances up to 7.5 kW
- Robust IP56, NEMA 4 enclosure minimizes impact from wildlife, insects, dust, and weather
- CE, C-Tick, cULus and UL approved

### Mobile App Features

- Real-time System Monitoring
  - Motor Frequency
  - Motor Current
  - Motor Voltage
- Drive Set-up
  - Maximum Frequency
  - Minimum Frequency
  - Minimum Off-time
  - Underload



### Specification Solar Controller

| Input                       |                          |
|-----------------------------|--------------------------|
| DC (PV)                     | 850V DC, open circuit    |
| Output                      |                          |
| Max. Output Voltage         | up to 460 V AC, 3-phase  |
| Max. Amps (RMS)             | up to 19.9 A, each phase |
| Output Frequency            | 20-60 Hz                 |
| Efficiency at Max Power     | 98 % (approx.)           |
| PV Source                   |                          |
| Max. Input Voltage          | *200 - 850 V DC          |
| Max. Amps Input             | 19.3 A DC, continuous    |
| Max. Input Power            | Up to 11.7 kW            |
| Controller Size - L x W x D |                          |
| mm                          | 400 x 324 x 233 mm       |
| Operating Conditions        |                          |
| Temperature Range           | -25 °C to 50 °C          |
| Relative Humidity Range     | 0 to 100% Condensing     |
| Enclosure Rating            | Type 4 / IP56            |



# DRIVE-TECH MINI SOLAR

Compact, variable frequency drive for solar pumping applications

## Features

- MPPT control maximizes efficiency of input power
- Powered by DC solar array
- Built in diagnostics and protection features
- Soft-start feature prevents water hammer and increases system life
- Control of AC induction and permanent magnet synchronous motors
- Robust IP55 minimizes impact of wildlife, insects, dust and weather

## Specifications

### Advanced functionalities:

- Monitoring and programming with smartphone and FE Connect App, available for Android and iOS mobile devices
- Remote control using a smartphone nearby as a modem
- Copy and paste of programming recipes
- Ability to send reports via email
- Multilingual support

### Built-in diagnostics & protection:

- Undervoltage
- Overvoltage
- Surge
- Open circuit
- Overheat controller
- Dry run

## System performance

- P.F. line side: 1
- Power frequency: 50-60 Hz ( $\pm 2\%$ )
- Stocking temperature: from  $-30\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$
- Minimum ambient temperature at rated current:  $-10\text{ }^{\circ}\text{C}$
- Maximum ambient temperature at rated current:  $+40\text{ }^{\circ}\text{C}$
- Maximum altitude at rated current: 1000m (derating 1 % per 100 m)
- Maximum relative humidity: 95% without condensation
- Grade of protection: IP55 (NEMA 4) or motor IP when connected to motor terminal box (protect the device from exposure to sunlight and atmospheric agents)
- Connectivity: serial RS 485 for COMBO operation (up to 8 units) + Bluetooth SMART for motoring programming + MODBUS RTU



### EMC compatibility for residential environment:

- Integrated PFC (P.F. 1) to meet EN61000-3-2
- Integrated input filter for Category C1 (EN61800-3), Class B (EN55011)

### Inputs and outputs:

- 2 programmable digital inputs for motor start & stop
- Modbus RTU
- 2 output relays for alarm and run indication
- 2 analog inputs 4-20 mA
- 2 analog inputs 0-10 V

## Transducer specification

- Nominal output signal (protected against shortcut): 4 - 20 mA
- Power voltage [ $U_B$ ], protection antipolarity: 9 - 28 V
- Sensor temperature range:  $0\text{ }^{\circ}\text{C}$  -  $+80\text{ }^{\circ}\text{C}$
- Environment temperature range (based on electric connection):  $-20\text{ }^{\circ}\text{C}$  -  $+80\text{ }^{\circ}\text{C}$
- Shielded cable: 2 m
- Protection degree achieved with connector coupled: IP67

# SubMonitor Motor Protection

The SubMonitor is designed to protect 3-phase pumps with horsepower ratings between 3 and 200 Hp. Current, voltage and motor temperature are monitored using three integrated current transformers. A digital display provides current and voltage readings for all three legs and allows the user to set up the SubMonitor quickly and easily.

The SubMonitor is the latest innovation in 3-phase pump protection from Franklin Electric. Using state-of-the-art technology, the SubMonitor provides the ultimate protection for a pump and motor. There is simply no better way to protect a large 3-phase submersible pump investment than with a SubMonitor.

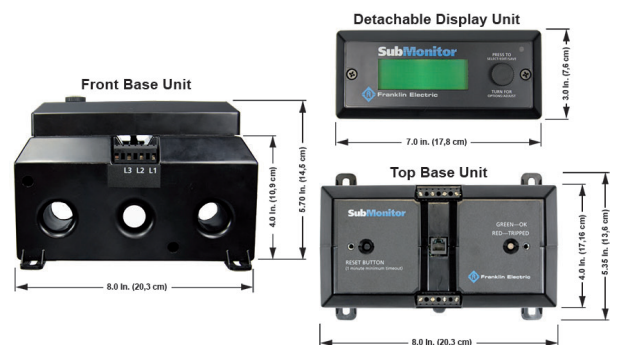
It's the protection device that can sense overheating straight from the motor windings! And it is made by the world leader in submersible motors - Franklin Electric.



## Product features

- Quick setup to monitor a motor, simply enter the Line Frequency (Hz), Line Voltage (volts), and Motor Service Factor Amp rating
- Digital display indicates voltage and current on all three legs at the same time, and fault messages are in easily understandable text
- Monitors - Under/Overload; Under/Overvoltage; Current Unbalance; Overheated Motor (Subtrol Equipped); False Start (Chattering); Phase Reversal
- For motors with service factor amp ratings between 3 and 359 amps
- One unit covers the entire range from 190 to 600 Volts
- No need to make additional turns around the CT or add external CTs
- Password Protection Option
- DIN Rail Mounting Option
- Stores fault, setting changes, and pump run-time, that can be accessed through the display
- the lightning protection is already included in the Premium Package
- Detachable NEMA 3R display unit can be mounted on panel door
- UL 508 Listed

## Dimensions



| Model number   |   |
|--|---|
| <b>Premium Package</b>   | 586 000 5100  |
| <b>Input Voltage</b>   | 190 – 600 VAC   |
| <b>Frequency</b>   | 60/50 Hz  |
| <b>Motor Service Factor Amps</b>   | 3 to 359 Amps   |
| Maximum Conductor Size Through Sensors                                       |   |
| Max. Diameter  | 0.920 in. (23 mm)   |
| Trip Response  |   |
| Motor,<br>Under / Overload,<br>Under / Overvoltage,<br>Overheat<br>Unbalance | 3 seconds   |
| <b>Control Circuit Rating</b>  | 1.5 Amp AC, up to 600 volts                               |
| <b>Signal Circuit Rating</b>   | 1 Amp AC, up to 250 volts (Incandescent: 100 watts max.)  |
| Wiring Terminals   |   |
| <b>Wire Gauge</b>  | #12 to #18 AWG  |
| <b>Tighten to</b>  | 4.5 in-lbs  |
| <b>Weight (SubMonitor)</b>   | 3.3 lbs/7,3 kg  |
| <b>Carton Size (Std. Unit)</b>   | 7,75 in x 11,5 in x 6,75 in (19,7 cm x 29,2 cm x 17,1 cm) |
| <b>Shipping Weight (Std. Unit)</b>   | 3.5 Lbs./7,5 kg   |



## SubStartSC® Single phase Submersible Motor Starter

The SubStartSC® range covers all PSC motors from 0.25kW to 2.2kW for all voltages. Ergonomic design, attention to detail and unique features make the SubStartSC® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.

### Product features:

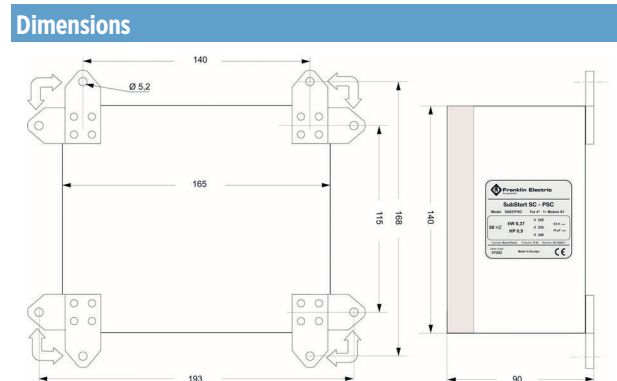
- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors



| Ergonomically designed |   |
|------------------------|---|
| <b>Mounting</b>        | Easy wall mounting without destroying the protection rating of the enclosure. |
| <b>Wiring</b>          | Sufficient space is provided for ease of wiring.                              |
| Enclosure              |   |
| <b>Protection</b>      | IP54  |
| <b>Material</b>        | PVC / Polycarbonate   |
| Components             |   |
| <b>ON/OFF switch</b>   | Illuminated integral ON/OFF switch for ease of power                          |
| <b>Circuit breaker</b> | Thermal circuit breaker for protection of the motor.                          |
| <b>Capacitor</b>       | High quality motor run capacitor for long life                                |
| <b>Terminal board</b>  | Terminal board suitable for ease of reliable connections                      |
| <b>Cable glands</b>    | Cable glands to ensure IP54 rating  |

| Technical Specifications   |  |
|----------------------------|--|
| Mechanical                 |  |
| <b>Protection level</b>    | IP54                                       |
| <b>External dimensions</b> | 168 x 142 x 85mm                           |
| <b>Weight</b>              | 0,6 - 1,0 kg                               |
| <b>Mounting</b>            | Wall mounting (mounting hardware provided) |
| <b>Temperature</b>         | -5°C - +40°C                               |
| <b>Humidity</b>            | 50% at 55°C (without condensation)         |
| Electrical                 |  |
| <b>Voltage</b>             | 220 - 240V; - 6 / +10 %; 50Hz single phase |
| <b>Current</b>             | 16 A                                       |
| <b>Power</b>               | 0,25 - 2,2 kW                              |
| Standards                  |  |
| IEC 60439-1                |  |

| Submersible Motor Starter Specifications |                   |                   |                                  |   |                        |
|--|-------------------|-------------------|----------------------------------|---|------------------------|
| Part Number <sup>1</sup>                 | Type <sup>2</sup> | Motor rating (kW) | Nominal Current <sup>3</sup> (A) | Maximal expected current <sup>4</sup> (A) | Capacitor (µF) 450V ac |
| 284 623 3510                             | SS025SC           | 0,25              | 2,4                              | 9,4                                       | 12,5                   |
| 284 624 3510                             | SS037SC           | 0,37              | 3,3                              | 12,6                                      | 16                     |
| 284 625 3510                             | SS055SC           | 0,55              | 4,3                              | 17,7                                      | 20                     |
| 284 626 3510                             | SS075SC           | 0,75              | 5,7                              | 22,7                                      | 35                     |
| 284 627 3510                             | SS110SC           | 1,10              | 8,4                              | 33,9                                      | 40                     |
| 284 628 3510                             | SS150SC           | 1,50              | 10,7                             | 41,7                                      | 50                     |
| 284 629 3510                             | SS220SC           | 2,20              | 14,7                             | 61,8                                      | 70                     |



### Notes:

1. Can be used with both 220-230V and 230-240V PSC motor ranges.
2. Type indicates motor power rating and motor type.
3. Nominal supply current at nominal voltage
4. Motor starting current under nominal conditions



## SubStart3P® 3 Phase Submersible Motor Starter

The SubStart3P® range covers all 3 phase motors from 0.37kW to 7,5kW. Ergonomic design, attention to detail and unique features make the SubStart3P® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.

### Product features:

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors

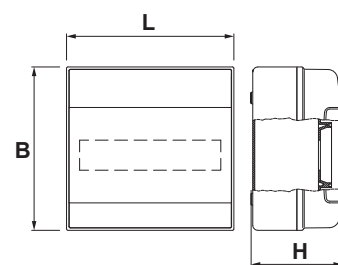


| Ergonomisches Design   |   |
|------------------------|---|
| <b>Mounting</b>        | Easy wall mounting without destroying the protection rating of the enclosure. |
| <b>Wiring</b>          | Sufficient space is provided for ease of wiring.                              |
| Enclosure              |   |
| <b>Protection</b>      | IP54  |
| <b>Material</b>        | PVC / Polycarbonate   |
| Components             |   |
| <b>ON/OFF Switch</b>   | Manual motor starter switch   |
| <b>Circuit breaker</b> | Integrated thermal and magnetic overload protection                           |
| <b>Auxiliary relay</b> | Powered auxiliary contactor for use with external switches                    |
| <b>Cable glands</b>    | Ensure IP54 rating  |

| Submersible Motor Starter Specifications |                   |              |                  |                      |
|--|-------------------|--------------|------------------|----------------------|
| Motor Rating (kW)                        | Type 3~ 400V 50Hz | Model Number | Nom. Current (A) | Starting Current (A) |
| <b>0,37</b>                              | SS037P3           | 288 500 3510 | 1,1              | 5,4                  |
| <b>0,55</b>                              | SS055P3           | 288 501 3510 | 1,6              | 7,4                  |
| <b>0,75</b>                              | SS075P3           | 288 502 3510 | 2                | 10,6                 |
| <b>1,10</b>                              | SS110P3           | 288 503 3510 | 2,8              | 16                   |
| <b>1,50</b>                              | SS150P3           | 288 504 3510 | 3,9              | 20,7                 |
| <b>2,20</b>                              | SS220P3           | 288 505 3510 | 5,5              | 29,8                 |
| <b>3,0</b>                               | SS300P3           | 288 506 3510 | 7,5              | 42                   |
| <b>3,7</b>                               | SS370P3           | 288 507 3510 | 9                | 52,3                 |
| <b>4,0</b>                               | SS400P3           | 288 508 3510 | 9,9              | 57                   |
| <b>5,5</b>                               | SS550P3           | 288 509 3510 | 12,6             | 77,2                 |
| <b>7,5</b>                               | SS750P3           | 288 510 3510 | 17,1             | 99,3                 |

| Technical Specifications                |   |
|---|---|
| Mechanical                              |   |
| Protection level                        | IP 54   |
| Environment                             | This equipment is suitable for environment B according to IEC/EN 61439 - 1 : 2010 |
| Altitude                                | max 2000m above sea level   |
| External dimensions                     | 190x184x106mm <= 4kW<br>250x256x140mm >= 5,5kW                                    |
| Weight                                  | 1,2 kg <= 4kW<br>2,3 kg >= 7,5kW  |
| Mounting                                | Wall mounting (mounting hardware provided)  |
| Storage temperature                     | -25°C to +55°C  |
| Operation temperature                   | -5°C to +40°C   |
| Humidity                                | 50% at 40°C (without condensation)  |
| Electrical                              |   |
| Working Voltage                         | 3~ / 50Hz<br>380 - 415V / -10% +6%  |
| Voltage tolerance                       | 380V -10% / 415V+6%   |
| Rated insulation voltage                | 400 Vac   |
| Rated short-time withstand current      | 50 kA   |
| Rated conditional short-circuit current | 50 kA   |
| Current                                 | 5A, 9A, 16 A  |
| Power                                   | 0,37kW - 7,5kW  |
| Standards                               |   |
| IEC/EN 61439 - 1 : 2010                 |   |

| Dimensions            |        |        |        |
|-----------------------|--------|--------|--------|
| Motor Ratings (kW)    | B (mm) | L (mm) | H (mm) |
| <b>0,37kW - 4,0kW</b> | 190    | 184    | 106    |
| <b>5,5kW - 7,5kW</b>  | 250    | 256    | 140    |





## SubTronicSC® Single Phase Motor Protection

The SubTronicSC® range covers all PSC motors from 0.25kW to 2.2kW for all voltages. Ergonomic design, attention to detail and unique features make the SubTronicSC® motor starter range your first choice when considering submersible motor protection. In conjunction with Franklin Electric submersible motors you now have an tangible water system advantage resulting in ease of installation and reliable protection.

### Product features:

- Attention to detail – every aspect engineered for the application
- The complete package – The device is 100% compatible with the motor characteristics
- All in one name – Reliability backed by the leader in submersible motors



| Ergonomically designed                         |  |
|--|--|
| Mounting                                       | Easy wall mounting offering various options without destroying the protection rating of the enclosure.   |
| Wiring   | Reliable connectors are provided for ease of wiring.   |
| Motor compatible design                        |  |
| Matching range                                 | The SubTronicSC® Protector range was designed to match the Franklin Electric range of PSC motors.  |
| Wide range of operation                        | Compatibility with motor design allows for a wide range of operation resulting in minimized nuisance tripping.   |
| Intelligent Protection and Management features |  |
| Dry-run detection (without probes)             | Prevents motor and pump damage due to running the pump without water based on a proprietary reliable detection method.   |
| Dry-run auto- reset                            | Automatic dry-run reset time is based on a proprietary search algorithm to find the best operating point for weak wells. Reset time 6 to 60 minutes.   |
| Over & Under voltage                           | Prevents motor damage that may be caused by abnormal voltage conditions without limiting the range of operation, made possible by matching the design of the SubTronicSC® Protector with the motor. Reset time approximately 3 minutes.                              |
| Over current protection                        | Prevents operation under conditions where motor current may exceed safe levels due to bound pump or other fault condition. Detection is based on current heating capacity measurement to prevent unnecessary nuisance tripping. Reset time approximately 10 minutes. |
| Faulty Start Protection                        | Prevents system damage due to factors such as faulty contacts or switch. Contact failure detection reacts fast and will prevent damage to system components.   |
| Rapid Cycle Protection                         | Prevents system damage due to factors such as continuous rapid cycling and excessive motor thermal cycling caused by waterlogged tank, faulty contacts or faulty pressure switch.  |
| Indicators                                     |  |
| Status   | Indication shows normal operation or other condition.  |
| Voltage  | Faulty voltage condition is indicated.   |
| Fault conditions                               | Dry-run, Over current, Rapid Cycling, and Faulty start are indicated.  |

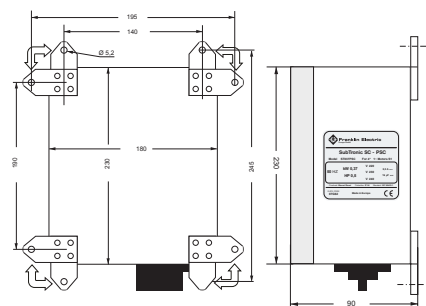
### Technical Specification

| Mechanical  |  |
|---|--|
| Protection level                                      | IP54                                       |
| External dimensions                                   | 290 x 230 x 95mm                           |
| Weight  | 0,6 - 1,0 kg                               |
| Mounting  | Wall mounting (with options)               |
| Temperature   | -5°C - +40°C                               |
| Humidity  | 50% at 55°C (without condensation)         |
| Electrical  |  |
| Voltage   | 220 - 240V; $\pm 10\%$ ; 50Hz single phase |
| Current   | 16 A                                       |
| Power   | 0,25 - 2,2 kW                              |
| Standards   |  |
| IEC 60439-1 when supplied with suitably fused supply. |  |

### SubTronic SC Motor Protection Specifications

| Part Number  | Type     | Motor rating (kW) | Nominal Current (A) | Maximal expected current (A) | Capacitor (μF) 450V ac |
|--------------|----------|-------------------|---------------------|------------------------------|------------------------|
| 284 623 3511 | ST025PSC | 0,25              | 2,4                 | 9,4                          | 12,5                   |
| 284 624 3511 | ST037PSC | 0,37              | 3,3                 | 12,6                         | 16                     |
| 284 625 3511 | ST055PSC | 0,55              | 4,3                 | 17,7                         | 20                     |
| 284 626 3511 | ST075PSC | 0,75              | 5,7                 | 22,7                         | 35                     |
| 284 627 3511 | ST110PSC | 1,10              | 8,4                 | 33,9                         | 40                     |
| 284 628 3511 | ST150PSC | 1,50              | 10,7                | 41,7                         | 50                     |
| 284 629 3511 | ST220PSC | 2,20              | 14,7                | 61,8                         | 70                     |

### Dimensions



## SubTronic3P® 3 Phase Motor Protection

The SubTronic3P® range covers all 4 inch 3 phase motors from 0.37kW to 7,5kW. Ergonomic design, attention to detail and unique features make the SubTronic3P® range your first choice when considering submersible motor protection and management. Together with Franklin Electric submersible motors you have an undisputable advantage, resulting in ease of installation, sophisticated system management and peace of mind.



| Ergonomically designed                         |   |
|--|---|
| Mounting                                       | Easy wall mounting offering various options without destroying the protection rating of the enclosure.  |
| Wiring   | Reliable connectors are provided for ease of wiring.  |
| Motor compatible design                        |   |
| Matching range                                 | The SubTronic3P® Protector range was designed to match the Franklin Electric range of 3 phase motors.   |
| Wide range of operation                        | Compatibility with motor design allows for a wide range of operation resulting in minimized nuisance tripping.  |
| Intelligent Protection and Management features |   |
| Dry-run detection (without probes)             | Prevents motor and pump damage due to running the pump without water based on a proprietary reliable detection method.  |
| Dry-run auto- reset                            | Automatic dry-run reset time is based on a proprietary search algorithm to find the best operating point for weak wells. Reset time in max. 60 minutes.   |
| Over & Under voltage                           | Prevents motor damage that may be caused by abnormal voltage conditions without limiting the range of operation, made possible by matching the design of the SubTronic3P® Protector with the motor. Reset time approximately 3 minutes.   |
| Over current protection                        | Prevents operation under conditions where motor current may exceed safe levels due to bound pump or other fault condition. Detection is based on current heating capacity measurement to prevent unnecessary nuisance tripping. Auto-reset in 15 minutes. Manual reset possible in approximately 5 minutes by reapplying power. |
| Rapid Cycle Protection                         | Prevents system damage due to factors such as continuous rapid cycling and excessive motor thermal cycling caused by waterlogged tank, faulty contacts or faulty pressure switch. Auto-reset in 5 minutes if condition clears. Manual reset possible in approximately 5 minutes by reapplying power.                            |
| Indicators                                     |   |
| Status   | Indication shows normal operation or other condition.   |
| Voltage  | Faulty voltage condition is indicated.  |
| Fault conditions                               | Dry-run, Over Current, Rapid Cycling, Over Voltage and Under Voltage are indicated.   |

### Specifications

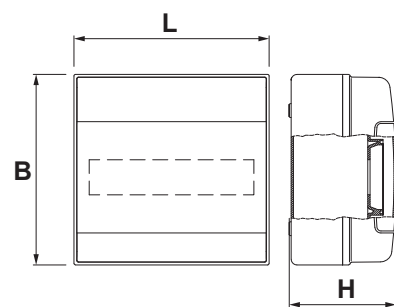
| Mechanical Specification                |   |
|---|---|
| Protection level                        | IP 54   |
| Environment                             | This equipment is suitable for environment B according to IEC/EN 61439 - 1 : 2010 |
| Altitude                                | max 2000m above sea level   |
| External dimensions                     | 190 x 184 x 106 mm <= 3kW   |
|   | 250 x 256 x 140 mm >= 3,7kW   |
| Weight                                  | 1,2 kg <= 3kW   |
|   | 2,5 kg >= 3,7kW   |
| Mounting                                | Wall mounting (mounting hardware provided)  |
| Storage temperature                     | -25°C to +55°C  |
| Operation temperature                   | -5°C to +40°C   |
| Humidity                                | 50% at 40°C (without condensation)  |
| Electrical Specifications               |   |
| Rated Voltage                           | 3- / 50Hz<br>380 - 415V   |
| Voltage tolerance                       | 380V -10% / 415V+6%   |
| Rated insulation voltage                | 400 Vac   |
| Rated short-time withstand current      | 50 kA   |
| Rated conditional short-circuit current | 50 kA   |
| Current                                 | 5 A ; 9 A ; 25 A  |
| Power                                   | 0,37 - 7,5kW  |
| Standards                               |   |
| IEC/EN 61439 - 1 : 2010                 |   |

### SubTronic 3P Motor Protection Specifications

| Motor Rating (kW) | Type 3phase / 400V 50Hz | Model Number | Nom. Current (A) | Max.Current (A) |
|-------------------|-------------------------|--------------|------------------|-----------------|
| 0,37              | ST037P3                 | 288 500 3511 | 1,1              | 5,4             |
| 0,55              | ST055P3                 | 288 501 3511 | 1,6              | 7,4             |
| 0,75              | ST075P3                 | 288 502 3511 | 2                | 10,6            |
| 1,10              | ST110P3                 | 288 503 3511 | 2,8              | 16              |
| 1,50              | ST150P3                 | 288 504 3511 | 3,9              | 20,7            |
| 2,20              | ST220P3                 | 288 505 3511 | 5,5              | 29,8            |
| 3                 | ST300P3                 | 288 506 3511 | 7,5              | 42              |
| 3,7               | ST370P3                 | 288 507 3511 | 9                | 52,3            |
| 4                 | ST400P3                 | 288 508 3511 | 9,9              | 57              |
| 5,5               | ST550P3                 | 288 509 3511 | 12,6             | 77,2            |
| 7,5               | ST750P3                 | 288 510 3511 | 17,1             | 99,3            |

### Dimensions

| Motor Rating (kW) | B (mm) | L (mm) | H (mm) |
|-------------------|--------|--------|--------|
| 0,37kW - 3kW      | 190    | 184    | 106    |
| 3,7kW - 7,5kW     | 250    | 256    | 140    |





## SubDrive® Connect

This new generation of our proven constant pressure system, includes all the functionality of the current design, as well as the benefits and advanced features of the new SubDrive Connect System. Taking into account over 16 years of field experience with the SubDrive Family, the new platform is capable to optimize system performance, water pressure supply and system operating diagnostics. In addition to the enhanced features below, the Connect models offering Wi-Fi connection for use with the FE Connect mobile application. With state of the art technology and well-chosen components, the new SubDrive Controllers provides constant pressure through variable speed control of submersible pumps.

### Features:

- Constant water pressure with a wide range of settings (0.5 to 9.5bar)
- User-defined motor frequency range
- FE Connect Mobile Application for advanced settings and monitoring
- Plug and play system
- Built-in diagnostics and protection
- Easy-to-read LCD display for system pressure and fault identification
- Built-in duplex alternator for dual drive operation
- Proven components for long-term reliability
- Backwards compatibility and easy installation
- Single-phase 3-Wire motor operation (60Hz)
- Advanced motor soft-start feature increases motor life
- CE, cULus and UL approved



### Service / Support:

- Easy commissioning by plug and play system
- User defined set-up
- Spare part kits for electronic controller and motor (on Request)
- Franklin Electric Connect Mobile Application

### System Options:

- Moisture Sensor – Weet floor identification
- 4-20mA analog pressure transducer – 6, 10, 16bar
- Outdoor rated cable kit for analog pressure transducer
- Communication cable kit for built-in duplex alternator
- Replacement Kit for Input and Display Board
- Input and Output Filter
- Lightning Arrestor
- Fan Replacement Kit
- Standard SubDrive Pressure Switch

### SubDrive Connect ordering Information:

| Drive Model          | Order Nb.          | Three Phase Motors |                | Single-Phase (3-Wire) Motors<br>60 Hz |
|----------------------|--------------------|--------------------|----------------|---------------------------------------|
|                      |                    | 50 Hz              | 60 Hz          |                                       |
| <b>SubDrive 1100</b> | <b>5870205153C</b> | 0,75kW - 1,1kW     | 0,75kW - 1,1kW | 0,37kW - 1,1kW                        |
| <b>SubDrive 1500</b> | <b>5870205353C</b> | 0,75kW - 1,5kW     | 0,75kW - 1,5kW | 0,37kW - 1,5kW                        |
| <b>SubDrive 2200</b> | <b>5870205453C</b> | 0,75kW - 2,2kW     | 0,75kW - 2,2kW | 0,37kW - 2,2kW                        |

### SubDrive Connect Specification:

| Drive Model        | SD 1100                             | SD 1500                             | SD 2200                              |
|--------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| SubDrive Model Nb. | 5870205153C                         | 5870205353C                         | 5870205453C                          |
| Input Voltage      | 230V AC, 3-phase                    | 230V AC, 3-phase                    | 230V AC, 3-phase                     |
| Max. Input Amps    | 12 A                                | 19 A                                | 23 A                                 |
| Output Frequency   | 30 - 77 Hz                          | 30 - 77 Hz                          | 30 - 77 Hz                           |
| Max. Output Amps   | 5,9 A (3-phase) 10,4 (single-phase) | 8,1 A (3-phase) 13,2 (single-phase) | 10,9 A (3-phase) 13,2 (single-phase) |
| Pressure Range     | 0,5 - 9,5 bar                       | 0,5 - 9,5 bar                       | 0,5 - 9,5 bar                        |



## Termination Kit 4"

This proven, sturdy solution is your choice of cable joining in temporary pump applications or when re-usage if the drop cable is desired. Furthermore, the flexibility and safety it provides for under field service conditions makes it the preferred choice over conventional, not breakable splicing kits.

### Technical Description:

- Max. current 18 Ampere in air @ max. 50°C ambient temperature
- Max. current 23 Ampere submersed in water @ max. 30°C ambient temperature
- Max. voltage 750 V



## Double Plug Lead for Termination Kit

Required for use of lead termination kit. Connected between termination kit and 4" motor.

- max. current 18 Ampere in air @ max. 50°C ambient temperature
- max. current 23 Ampere submersed in water @ max. 30°C ambient temperature
- max. Voltage 750V AC
- PSC / 2-wire / 3-wire Motors and 3 ~ Motors
- Optional strain relief
- Approvals: KTW



## Splicing Kit 1,5 - 10mm<sup>2</sup>

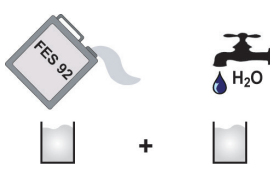
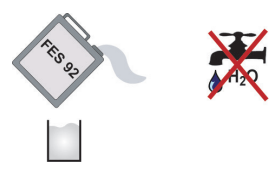

- 4 wire
- 1,5 - 10mm<sup>2</sup>
- up to 1,2kV



## Filling Liquid

### Filling liquid 5 L FES92

|                            |   |       |                            |   |        |
|----------------------------|---|-------|----------------------------|---|--------|
| 4" Encapsulated            | → | FES93 | 8" Encapsulated Standard   | → | FES91  |
| 6" Encapsulated Standard   | → | FES91 | 8" Encapsulated HighTemp75 | → | FES92  |
| 6" Encapsulated HighTemp90 | → | FES92 | Rewindable Motors All      | → | FES93  |
|                            |   |       | 6" Rewindable Motors PM    | → | FES 91 |

| FES91   | FES92   | FES93  |
|---|---|--|
|  |  |  |



## Motor Filling Kit

This kit contains all necessary tools to check and replenish Franklin Electric submersible motors with FES 91, 92 or 93 filling liquid (fill solution/concentrate must be ordered separately)





## 6" Permanent Star Plug

### Application

For some applications it may be necessary to permanently run a star-delta submersible motor in star connection. This may be achieved by using the PERMANENT-STAR-PLUG. This connector short - circuits all three pins in one of the two motor sockets and is designed to replace one lead.



## Couplings

### Application

Franklin Electric offers this line of motor-pump couplings for maximum customer convenience in matching the Franklin motor to a variety of pump shafts. Couplings are designed to transmit the pump thrust to the motor in order to provide maximum benefits from the Franklin internal thrust bearing construction.

Hardened stainless steel spacer discs in the 4" and 6" couplings assure positive bearing between motor and pump shafts, and assure full support for downward thrust created by the pump.

8" couplings DO NOT contain hardened spacer discs, since the motor shaft itself is hardened.



## Surge Arrestor

### Application

These surge arrestors or their equivalents are highly recommended for protecting submersible motors from a variety of commonly occurring high voltage spikes which can damage the motor insulation system and cause motor winding failure. These arrestors will not, as is true of any surge protection equipment, protect the motor from a direct lightning strike.



## Corrosion Protection 4"

### Application

The sacrificial anode attaches to the bottom end bell of Franklin Electric 4" Super Stainless submersible motors. Since cast iron is more chemically active than the metals that make up the motor and pump, it is the cast iron that reacts to the corrosive elements in the water. This results in longer motor and pump life in aggressive / corrosive water conditions.

LT

HT



## PT100 for 6" and 8" Encapsulated Motors

### Application

The PT100 is a precision platinum wire resistor that is specified occasionally as a temperature input for process control equipment. A jacketed control lead must be run from the PT100 lead to the above-ground equipment. The above-ground equipment is not available from Franklin Electric and is typically part of a custom panel or data acquisition system.

PT100 sensor retrofit kits from Franklin Electric come with complete instructions and allow for easy field installation.

#### Standard Motors



#### HighTemp Motors



## PT100 Rewindable Motors

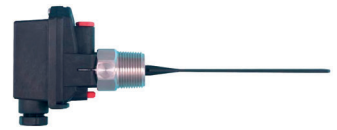
- Fitted into the upper end bell flange , all end bells 6",8",10" and 12" Rewindable are prepare for installation PT 100
- Measures the temperature of the filling liquid
- Conductor with a resistance proportional to the temperature
- Allows monitoring the temperature continuously

The above-ground equipment is not available from Franklin Electric and is typically part of a custom panel or data acquisition system . PT100 sensor retrofit kits from Franklin Electric come with complete instructions and allow for easy field installation.



## Flow Paddle Switch

The flow switch utilizes the force of liquid flow to propel its paddle and to detect the incoming flow or movement of the existing liquid in the pipe. A required Part of the 6" High Efficiency Solar System.



## Level Switch

A float switch is a device used to detect the level of liquid within a tank. A required Part of the 6" High Efficiency Solar System.



## DC Disconnect

To disconnect the drive even under load safely from the solar generator, Franklin Electric offers suitable DC disconnect switches for different power ratings.



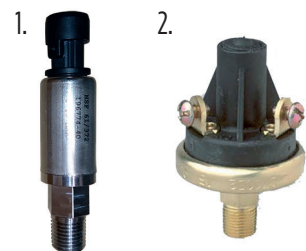
## Inline Flow Switch

The Inline Flow Switch operates magnetically. The piston within the switch body should be a free fit and spring back to its off position as soon as flow stops. For flow rates up to 4 m³/h; Connection: G1"



## Pressure Switch SubDrive Constant- pressure Controller

1. The pressure switch signals continuously prevailing in the water supply system pressure to the SubDrive controller.
2. The pressure switch signals continuously prevailing in the water supply system pressure to the SubDrive controller. The factory setting of the desired pressure is 3,4bar; However, they can be changed.





## AC/DC POWER CONVERTER

- Accepts either AC (single-phase) or DC power source\*
- 230 V AC for use with 3-phase, 100 V Franklin Electric submersible motor
- 230 V AC for use with 3-phase, 200 V Franklin Electric submersible motor
- Converter box output power becomes the input source supplying the Fhoton™ Solar Drive
- Output short circuit protection
- Type 4 / IP66 indoor/outdoor rated enclosure for durability
- UL & CE rated
- Optional communication module

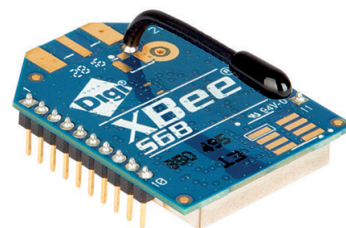
\*Source power from a single-phase generator, grid-tie AC source, or DC source; can pair with manual- or auto-crossover switch



| Model     | Description                        |
|-----------|------------------------------------|
| 581114204 | AC/DC Power Converter, Solar Drive |

## FHOTON™ WI-FI MODULE

- The Fhoton™ Wi-Fi Module (581COMM-APP) is an accessory for the Fhoton™ Drive which allows wireless communication between the Fhoton™ Drive and a mobile device (such as a smartphone or tablet) by means of the Fhoton™ App (for iOS or Android devices).



| Model       | Description  |
|-------------|--------------|
| 581COMM-APP | Wi-Fi Module |





## NOTES

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This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.





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Single member - Company subject to the control and coordination of Franklin Electric Co., Inc.

Franklin Electric reserves the right to change specifications without prior notice.

**[franklinwater.eu](http://franklinwater.eu)**

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