



## RF4E- IP65 Series

IP65 Rated Synchronous Permanent Magnet AC Alternator

### 3-Phase and Single-Phase Specifications

Model	Frequency Hz	3-Phase		Single-Phase Δ		Poles	Speed RPM	Motor Start kVA	Short Circuit A	Length mm	Weight kg
		kVA	kW	kVA	kW						
RF4E-10	50	10	8	6	4.8	4	1500	15	52	250	45
	60	12	9.6	7.5	5.8	4	1800	18	62		
RF4E-20	50	20	16	12	9.6	4	1500	30	100	315	65
	60	24	19.2	14.4	11.5	4	1800	36	120		
RF4E-30	50	30	24	18	14.4	4	1500	50	130	370	85
	60	35.5	28.4	21.6	17.3	4	1800	60	156		

The RFL PM Alternator is a breakthrough in 2 & 4 pole synchronous alternator design. The patented rotor design combines permanent magnets with reluctance to overcome the limitations of other permanent magnet synchronous alternator designs.

#### Characteristics

1. Very high efficiency 94%.
2. Excellent THD, <3%, no transients, no voltage spike on load rejection.
3. Small footprint and lightweight.
4. No electronics, increased reliability and robustness. Ease of fit on engine.
5. Permanent Magnet Rotor
6. **IP65 Protection. Fully sealed against water and dust ingress for harsh environments**
7. SAE3, SAE4, SAE5 Engine housing mounting options
8. SAE6½, SAE7½, SAE8, SAE10, SAE11½ Flywheel plate options

#### Advantages

- Unbalanced 3 Phase loads. Alternator can supply 3 x 1 Phase circuits with varying loads, as well as a 3 phase load at the same time.
- Motor Start capability: The RFL alternator can start single phase motors as well as 3 phase motors.
- Paralleling generators: The RFL rotor allows a wider out of phase angle over which they will lock together without high surge currents and shaft shock. This allows a number of smaller generators to be used to supply large loads with no special switching equipment.
- Adjustable location of feet, bottom and side mounting options

### Temperature Profile

Minutes	Load kW	Alternator Temp (°C)	Ambient Temp (°C)
0.0	0	55.2	45.9
2.0	16.72	55.9	46.6
10.0	16.28	63.2	50.5
18.3	20.12	65.5	51.0
20.8	19.87	70.7	55.0
26.5	19.68	79.3	59.5
27.5	16.10	80.3	61.0
36.7	15.90	84.5	61.4
41.7	16.20	85.7	60.3
45.0	16.15	86.3	61.8
50.0	16.10	87.5	60.5
51.7	11.10	87.9	60.3
56.7	11.17	86.7	60.8
60.0	11.16	85.7	61.0
63.3	15.41	85.9	60.2
65.0	16.12	86.5	60.4
70.0	15.66	88.5	61.2
73.3	15.63	89.4	62.0
76.7	11.81	90.3	62.5
83.3	11.80	88.8	60.9
86.7	19.15	87.6	62.4
93.3	18.94	91.5	64.2
96.7	18.84	93.7	62.7
100.0	18.78	95.7	64.0
101.7	15.79	96.5	63.8
108.3	15.79	95.9	61.4
Stable	15.77	93.2	59.9

The 16kW IP65 RF4E-Series model was tested with a dyno under laboratory conditions inside a sealed heat box simulating 60°C ambient temperature. The stabilised temperature of the front casing was at maximum rated load was found to reach a maximum of ~95°C, which is well within the maximum operating temperature of 120°C.

