

**SVI314F** | THREE-PHASE SYNCHRONOUS ALTERNATOR

## Product Data Sheet

**General Data**

|                                                |                                                    |                                  |                   |                 |
|------------------------------------------------|----------------------------------------------------|----------------------------------|-------------------|-----------------|
| Ambient Temperature                            | 40°C                                               | Method of Cooling                | Air cooling       |                 |
| Temperature Rise                               | 125°C                                              | Direction of Rotation            | Clockwise         |                 |
| Insulation Class                               | H                                                  | Maximum Over-speed               | 2250r/min         |                 |
| Power Factor                                   | 0.8                                                | Degree of Protection / Enclosure | IP23              |                 |
| Excitation                                     | Brushless                                          | Altitude                         | 1000m             |                 |
| Winding Pitch                                  | 2/3                                                | Stator winding                   | Double Layer Lap  |                 |
| Pole                                           | 4                                                  | Number of Terminal               | 12                |                 |
| Duty                                           | S1- Continuous                                     | Rotor                            | With damping cage |                 |
| Waveform                                       | TIF<50                                             |                                  |                   | THF<2%          |
| RFI Suppression                                | BS EN 61000-6-2&BS EN 61000-6-4,VDE 0875G,VDE0874N |                                  |                   |                 |
| Waveform distortion                            | Noload<1.5%,Non-distorting balanced linear load<5% |                                  |                   |                 |
| AVR MODEL                                      | Standard                                           | Selection                        |                   | PMG             |
|                                                | AS440                                              | KRS440                           |                   | MX341B    MX321 |
| Voltage Regulation - in steady state condition | ±1.0                                               | ±1.0                             |                   | ±0.5    ±0.5    |
| Short Circuit Current Capacity                 | Control does not sustain a short circuit current   |                                  |                   | 1750A           |

**Electrical Characteristic**

|                                                  |      |         |         |         |         |         |         |         |         |
|--------------------------------------------------|------|---------|---------|---------|---------|---------|---------|---------|---------|
| Frequency                                        | Hz   | 50      |         |         |         | 60      |         |         |         |
| Voltage (series star) Y                          | V    | 380/220 | 400/231 | 415/240 | 440/254 | 416/240 | 440/254 | 460/266 | 480/277 |
| Voltage (parallel star) YY                       | V    | 190/110 | 200/115 | 208/120 | 220/127 | 208/120 | 220/127 | 230/133 | 240/138 |
| Voltage (series delta) Δ                         | V    | 220     | 230     | 240     | 254     | 240     | 254     | 266     | 277     |
| Rated power at Class H (125° C) temperature rise | kVA  | 400     | 400     | 400     | 400     | 455     | 480     | 500     | 500     |
|                                                  | kW   | 320.0   | 320.0   | 320.0   | 320.0   | 364.0   | 384.0   | 400.0   | 400.0   |
| Efficiency at Class H (P.F.=0.8)                 | 4/4% | 93.2    | 93.3    | 93.6    | 93.8    | 93.3    | 93.4    | 93.4    | 93.7    |
|                                                  | 3/4% | 94.2    | 94.3    | 94.3    | 94.3    | 94.3    | 94.3    | 94.4    | 94.4    |
|                                                  | 2/4% | 94.5    | 94.4    | 94.3    | 94.2    | 94.4    | 94.4    | 94.4    | 0.3     |
| Efficiency at Class H (P.F.=1.0)                 | 4/4% | 94.6    | 94.8    | 95      | 95.1    | 94.8    | 94.8    | 94.9    | 95      |
|                                                  | 3/4% | 95.5    | 95.6    | 95.6    | 95.7    | 95.5    | 95.6    | 95.6    | 95.7    |
|                                                  | 2/4% | 95.7    | 95.7    | 95.7    | 95.6    | 95.7    | 95.7    | 95.7    | 95.7    |

**Reactances (%) at Class H**

|                                                   |         |                 |        |        |        |                  |        |        |        |
|---------------------------------------------------|---------|-----------------|--------|--------|--------|------------------|--------|--------|--------|
| Direct axis synchronous reactance unsaturated     | Xd      | 2.72            | 2.45   | 2.28   | 2.03   | 3.28             | 3.09   | 2.95   | 2.71   |
| Direct axis transient reactance saturated         | X'd     | 0.18            | 0.16   | 0.15   | 0.13   | 0.18             | 0.17   | 0.16   | 0.15   |
| Direct axis subtransient reactance saturated      | X''d    | 0.13            | 0.12   | 0.11   | 0.1    | 0.13             | 0.12   | 0.12   | 0.11   |
| Quadrature axis synchronous reactance unsaturated | Xq      | 2.35            | 2.12   | 1.97   | 1.75   | 2.9              | 2.73   | 2.61   | 2.39   |
| Quadrature axis subtransient reactance saturated  | X''q    | 0.31            | 0.28   | 0.26   | 0.23   | 0.43             | 0.41   | 0.39   | 0.35   |
| Leakage reactance                                 | Xl      | 0.06            | 0.05   | 0.05   | 0.04   | 0.07             | 0.07   | 0.06   | 0.06   |
| Negative sequence reactance saturated             | X2      | 0.23            | 0.2    | 0.19   | 0.17   | 0.29             | 0.27   | 0.26   | 0.24   |
| Zero sequence reactance unsaturated               | X0      | 0.08            | 0.08   | 0.07   | 0.06   | 0.1              | 0.09   | 0.09   | 0.08   |
| Short-circuit ratio                               | Kcc     | 0.3676          | 0.4082 | 0.4386 | 0.4926 | 0.3049           | 0.3236 | 0.3390 | 0.3690 |
| Short-circuit transient time constant (sec.)      | T'd     | 0.08            |        |        |        |                  |        |        |        |
| Subtransient time constant (sec.)                 | T''d    | 0.019           |        |        |        |                  |        |        |        |
| Open circuit time constant (sec.)                 | T'do    | 1.7             |        |        |        |                  |        |        |        |
| Armature time constant (sec.)                     | Ta      | 0.018           |        |        |        |                  |        |        |        |
| Stator Winding Resistance (20 °C) (Ra)            | ohm     | 0.00696         |        |        |        |                  |        |        |        |
| Rotor Winding Resistance (20 °C) (Rf)             | ohm     | 1.35            |        |        |        |                  |        |        |        |
| Exciter Stator Resistance (20 °C)                 | ohm     | 18              |        |        |        |                  |        |        |        |
| Exciter Rotor Phase resistance                    | ohm     | 0.068           |        |        |        |                  |        |        |        |
| No load excitation current                        | io (A)  | 0.5             | 0.52   | 0.6    | 0.6    | 0.5              | 0.51   | 0.6    | 0.6    |
| Full load excitation current                      | ic(A)   | 2.1             | 2.1    | 2.2    | 2.2    | 2.1              | 2.1    | 2.2    | 2.2    |
| Cooling air requirement                           | m³ /sec | 0.8m³/s 1700cfm |        |        |        | 0.99m³/s 2100cfm |        |        |        |

**Mechanical Characteristic**

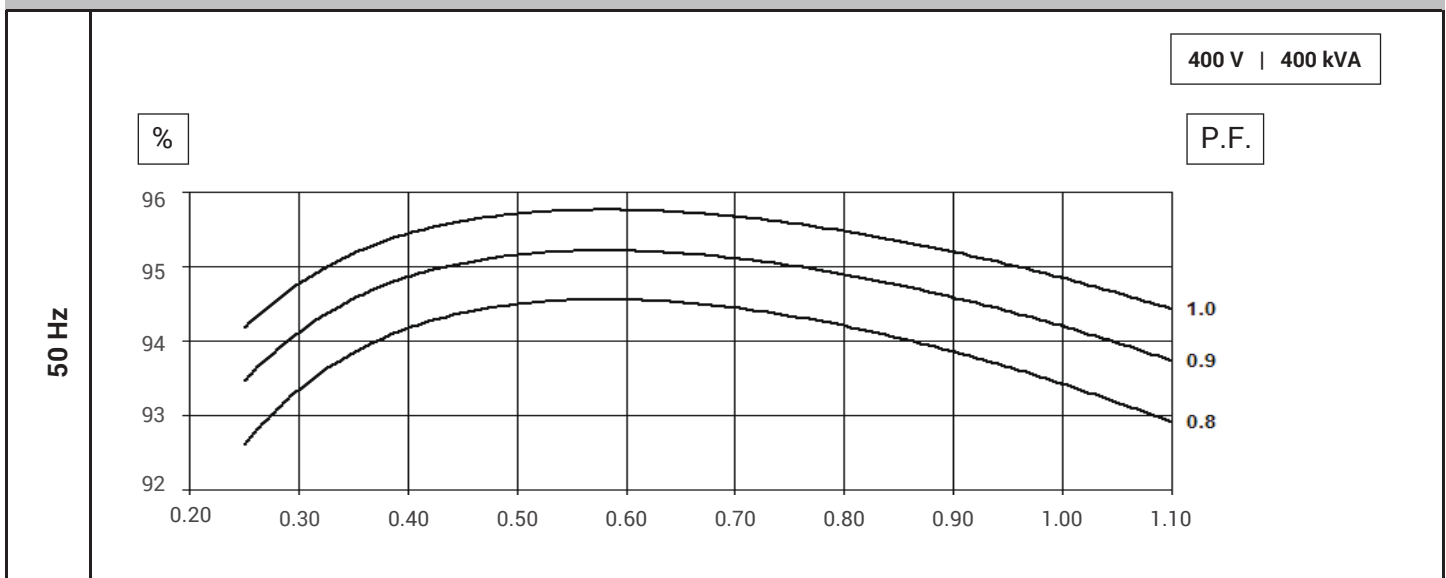
|                                     |                    |  |                    |  |
|-------------------------------------|--------------------|--|--------------------|--|
| Configuration                       | Single Bearing     |  | Double Bearing     |  |
| Type of Construction                | B2-SAE             |  | IM B34             |  |
| Total Weight - kgs                  | 1103               |  | 1085               |  |
| Weight wound stator - kgs           | 525                |  | 525                |  |
| Weight wound rotor - kgs            | 463                |  | 440                |  |
| Inertia (J) [kgm²]                  | 5.4292kgm²         |  | 5.2304kgm²         |  |
| Drive end bearing / Lubrication     |                    |  | BALL.6317-2RS(ISO) |  |
| Non-drive end bearing / Lubrication | BALL.6314-2RS(ISO) |  | BALL.6314-2RS(ISO) |  |
| Packing crate size (cm)             | 133X70X104         |  | 145X70X104         |  |

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## Product Data Sheet

**Ratings**

| Class Temp-Rise |                   | Cont. F - 105/40 °C |      |      |     | Cont. H - 125/40 °C |      |      |      | Standby - 150/40 °C |     |      |      | Standby - 163/27 °C |      |      |      |
|-----------------|-------------------|---------------------|------|------|-----|---------------------|------|------|------|---------------------|-----|------|------|---------------------|------|------|------|
| 50 Hz           | Series Star (V)   | 380                 | 400  | 415  | 440 | 380                 | 400  | 415  | 440  | 380                 | 400 | 415  | 440  | 380                 | 400  | 415  | 440  |
|                 | Parallel Star (V) | 190                 | 200  | 208  | 220 | 190                 | 200  | 208  | 220  | 190                 | 200 | 208  | 220  | 190                 | 200  | 208  | 220  |
|                 | Series Delta (V)  | 220                 | 230  | 240  | 254 | 220                 | 230  | 240  | 254  | 220                 | 230 | 240  | 254  | 220                 | 230  | 240  | 254  |
|                 | kVA               | 370                 | 370  | 370  | 370 | 400                 | 400  | 400  | 400  | 415                 | 430 | 430  | 430  | 425                 | 450  | 440  | 440  |
|                 | kW                | 296                 | 296  | 296  | 296 | 320                 | 320  | 320  | 320  | 332                 | 344 | 344  | 344  | 340                 | 360  | 352  | 352  |
|                 | Efficiency (%)    | 93.5                | 93.8 | 93.9 | 94  | 93.2                | 93.4 | 93.6 | 93.8 | 92.9                | 93  | 93.2 | 93.5 | 92.8                | 92.8 | 93.1 | 93.4 |
|                 | kW Input          | 317                 | 316  | 315  | 315 | 343                 | 343  | 342  | 341  | 357                 | 370 | 369  | 368  | 366                 | 388  | 378  | 377  |

**Three Phase Efficiency Curves****Dimensions**