



## **ALTERNATOR PRO18S C/4**

*three-phase brushless synchronous alternator with AVR - 4 poles*

Technical Data Sheet

## PRO18S C/4

### COMMON DATA

|                      |                     |  |             |
|----------------------|---------------------|--|-------------|
| Rated Power at 50Hz  | kVA                 | 30   |             |
| Rated Power at 60Hz  | kVA                 | 36   |             |
| Rated Power Factor   |                     | 0.8  |             |
| Nominal Temperature  | °C                  | 40   |             |
| Control System       |                     | self excited   |             |
| Execution            |                     | brushless  |             |
| Regulation Type      |                     | AVR  |             |
| Insulation Class     |                     | H  |             |
| Protection           |                     | IP23   |             |
| Maximum Overspeed    | rpm                 | 2250   |             |
| Overload             |                     | 110% of rated power for one hour in a cycle of 6 hours |             |
| Air Flow Requirement | m <sup>3</sup> /min | 6.9 at 50Hz  | 7.1 at 60Hz |
| R.F.I. Suppression   |                     | Standard EN55011                                       |             |

### REGULATION DATA

| AVR                     | HVR11                   | HVR30       |
|-------------------------|-------------------------|-------------|
| Sensing                 | single-phase            | three-phase |
| Voltage Regulation      | ±1%                     | ±1%         |
| Sustained Short Circuit | > 250% of rated current |             |

### WINDING DATA

|                           |                                     |      |
|---------------------------|-------------------------------------|------|
| Stator Winding            | Double layer with auxiliary winding |      |
| Rotor Winding             | with damping cage                   |      |
| Winding Pitch             | 2/3                                 |      |
| Number of Leads of Stator | 12                                  |      |
| Stator Winding Resistance | 0.117 at 20°C                       |      |
| Rotor Winding Resistance  | 2.9 at 20°C                         |      |
| Exciter Stator Resistance | 15 at 20°C                          |      |
| Exciter Rotor Resistance  | 0.72 at 20°C                        |      |
| THD at full load          | <3%                                 |      |
| THD at no load            | <3%                                 |      |
| Excitation at no load     | A <sub>dc</sub>                     | 0.92 |
| Excitation at full load   | A <sub>dc</sub>                     | 2.23 |

### STANDARD

|            |                             |
|------------|-----------------------------|
| References | EN60034-1 ISO8528-3 EN55011 |
|------------|-----------------------------|

## PRO18S C/4

### ELECTRICAL DATA

| Frequency                              |     | 50Hz - 1500rpm |                |                |                | 60Hz - 1800rpm |                |                |                |
|--|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Voltage Series Star                    | V   | <b>380/220</b> | <b>400/230</b> | <b>415/240</b> | <b>440/254</b> | <b>415/240</b> | <b>440/254</b> | <b>460/266</b> | <b>480/277</b> |
| Rated Power in Class H<br>(125°C/40°C) | kVA | 30             | 30             | 30             | 25             | 34             | 35             | 36             | 36             |
|  | kW  | 24             | 24             | 24             | 20             | 27.2           | 28             | 28.8           | 28.8           |
| Rated Power in Class F<br>(105°C/40°C) | kVA | 28             | 28             | 28             | 24             | 32             | 33             | 33.5           | 33.5           |
|  | kW  | 22.4           | 22.4           | 22.4           | 19.2           | 25.6           | 26.4           | 26.8           | 26.8           |
| Rated Power Standby<br>(150°C/40°C)    | kVA | 33             | 33             | 32             | 27.5           | 36             | 36.5           | 38             | 38             |
|  | kW  | 26.4           | 26.4           | 25.6           | 22             | 28.8           | 29.2           | 30.4           | 30.4           |
| Rated Power Standby<br>(163°C/27°C)    | kVA | 34             | 34             | 33             | 28             | 35             | 37.5           | 39             | 39             |
|  | kW  | 27.2           | 27.2           | 26.4           | 22.4           | 28             | 30             | 31.2           | 31.2           |

### EFFICIENCY IN CL. H

|     |  |       |  |  |  |  |  |       |
|-----|--|-------|--|--|--|--|--|-------|
| 4/4 |  | 87.1% |  |  |  |  |  | 88.8% |
| 3/4 |  | 87.5% |  |  |  |  |  | 89.3% |
| 2/4 |  | 85.0% |  |  |  |  |  | 87.0% |
| 1/4 |  | 81.3% |  |  |  |  |  | 82.2% |

### REACTANCES AND TIME CONSTANTS

| pcc  |  | 0.58  |       |       |       |       |       |       |
|--|--|-------|-------|-------|-------|-------|-------|-------|
| X <sub>d</sub> - dir. axis synchronous         |  | 269%  | 243%  | 226%  | 167%  | 307%  | 281%  | 243%  |
| X' <sub>d</sub> - dir. axis transient          |  | 21.1% | 19.0% | 17.7% | 13.1% | 24.0% | 22.0% | 19.0% |
| X'' <sub>d</sub> - dir. axis subtransient      |  | 8.9%  | 8.0%  | 7.4%  | 5.5%  | 10.1% | 9.3%  | 8.0%  |
| X <sub>q</sub> - quad. axis reactance          |  | 150%  | 135%  | 125%  | 93%   | 171%  | 156%  | 135%  |
| T' <sub>do</sub> - O.C. field time constant    |  | 125ms |       |       |       |       |       |       |
| T' <sub>d</sub> - Transient time constant      |  | 10ms  |       |       |       |       |       |       |
| T'' <sub>d</sub> - Sub-transient time constant |  | 5ms   |       |       |       |       |       |       |

### MECHANICAL DATA

|                                 |           |    |             |
|---------------------------------|-----------|----|-------------|
| Bearing non drive end           |           |    | 6307-2RS-C3 |
| Bearing drive end (B3/B14 form) |           |    | 6309-2RS-C3 |
| Weight of generator             | in B2     | kg | 150         |
|                                 | in B3/B14 | kg | 153.5       |
|                                 | in B3/B9  | kg | \           |

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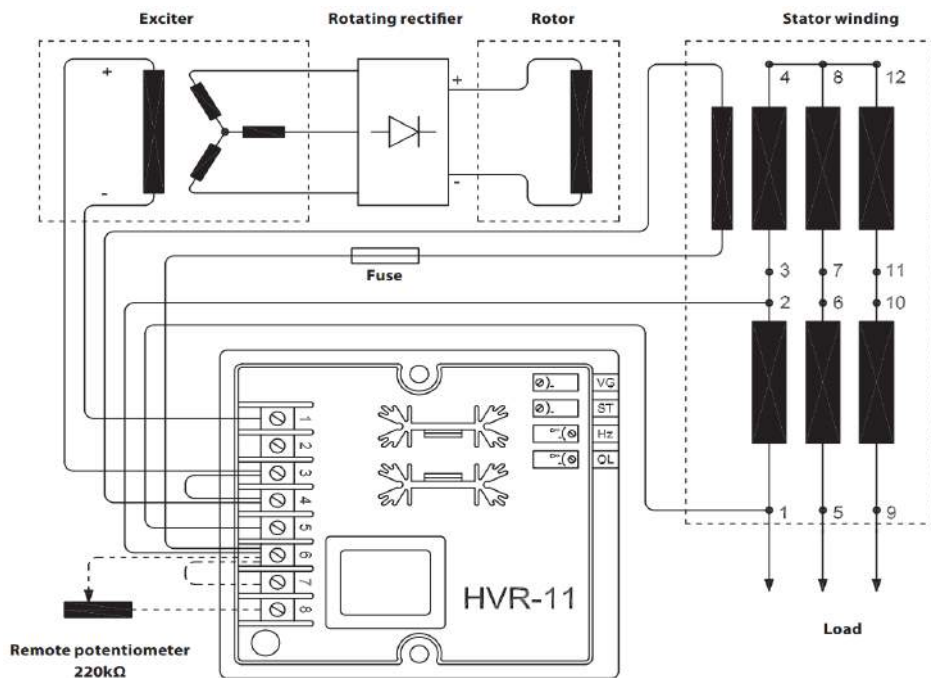
## MOMENT OF INERZIA

|         |                   |       |
|---------|-------------------|-------|
| B3/B9   | kg·m <sup>2</sup> | \     |
| SAE 7½  | kg·m <sup>2</sup> | 0.281 |
| SAE 8   | kg·m <sup>2</sup> | 0.29  |
| SAE 10  | kg·m <sup>2</sup> | 0.306 |
| SAE 11½ | kg·m <sup>2</sup> | 0.326 |
| SAE 14  | kg·m <sup>2</sup> | \     |
| SAE 18  | kg·m <sup>2</sup> | \     |
| B3/B14  | kg·m <sup>2</sup> | 0.272 |

## POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

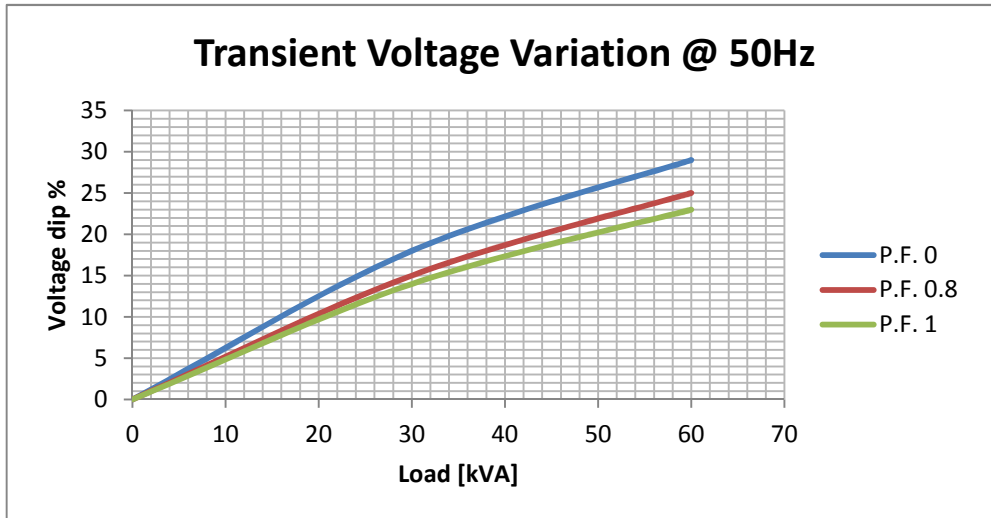
| Altitude      | Ambient temperature |      |      |      |      |
|---------------|---------------------|------|------|------|------|
|               | 25°C                | 40°C | 45°C | 50°C | 55°C |
| < 1000m       | 1.09                | 1    | 0.96 | 0.93 | 0.91 |
| 1000m - 1500m | 1.01                | 0.96 | 0.92 | 0.89 | 0.87 |
| 1500m - 2000m | 0.96                | 0.91 | 0.87 | 0.84 | 0.83 |
| 2000m - 3000m | 0.9                 | 0.85 | 0.81 | 0.78 | 0.76 |

## WIRING DIAGRAM

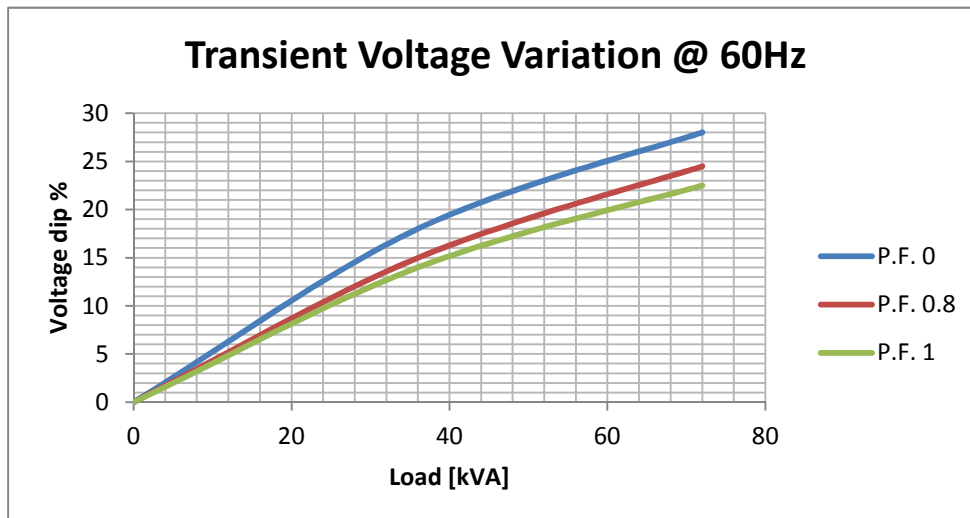


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**TRANSIENT VOLTAGE VARIATION 50Hz**

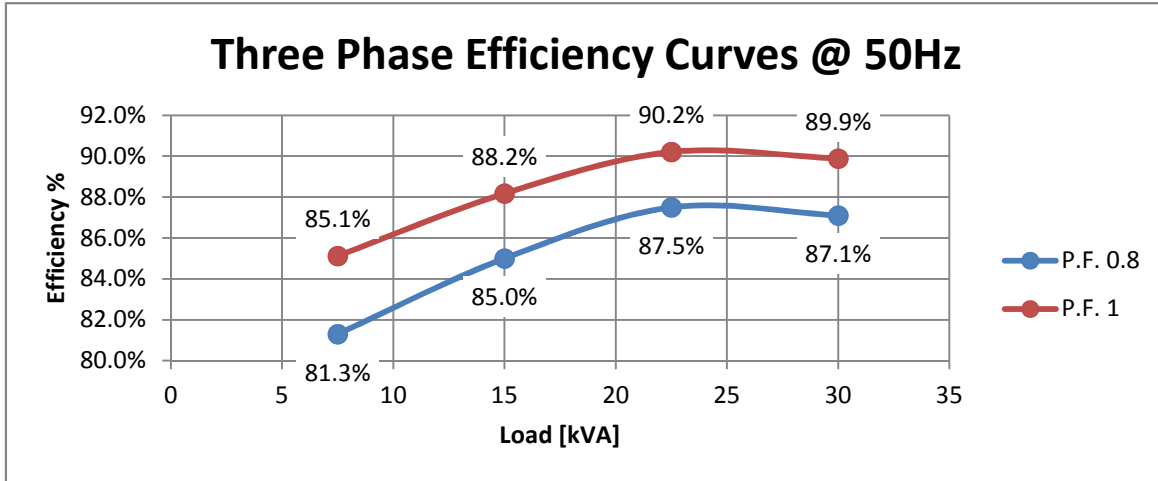


**TRANSIENT VOLTAGE VARIATION 60Hz**

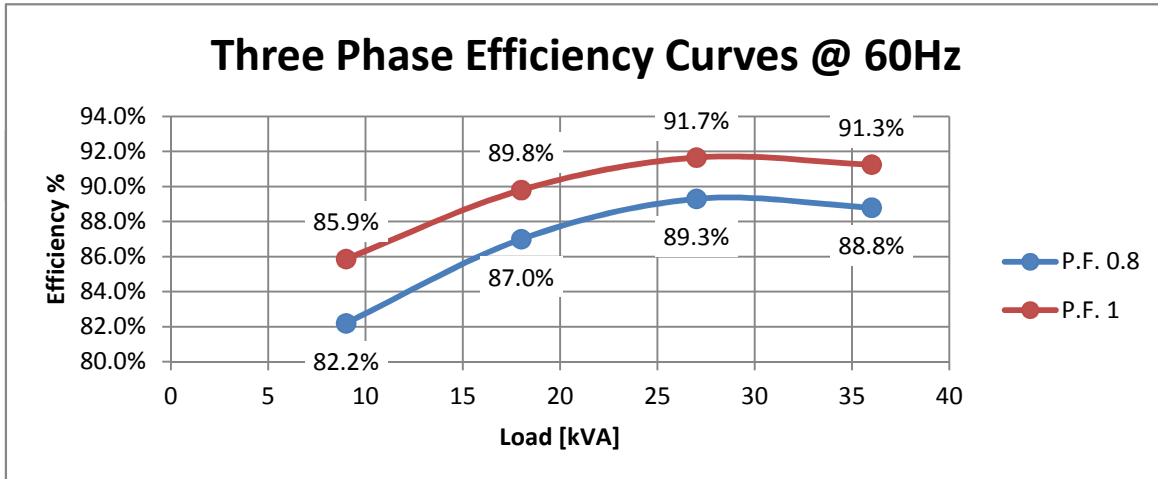


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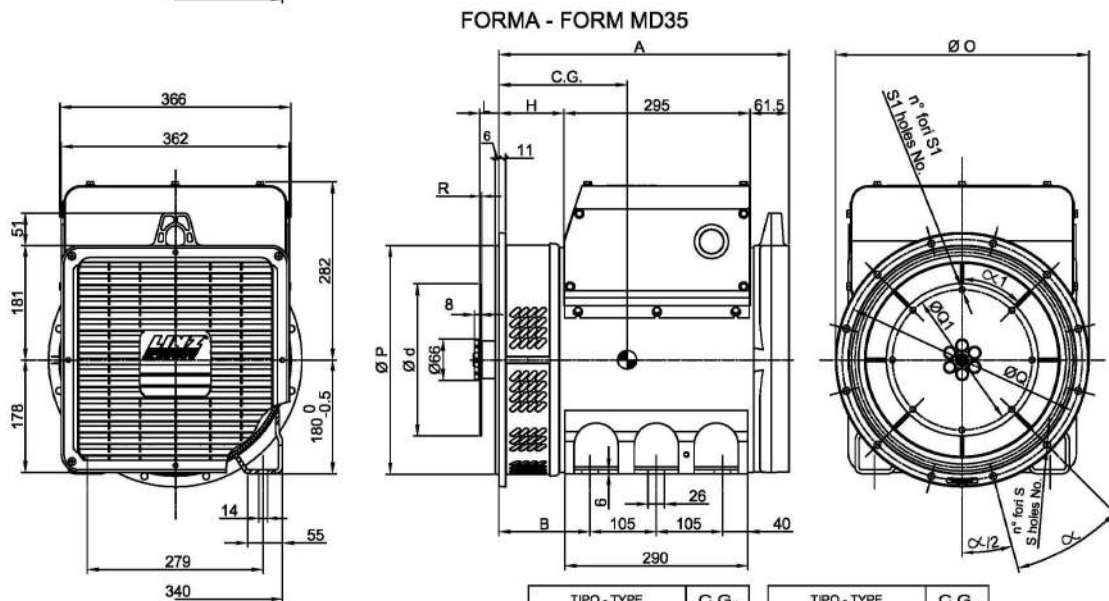
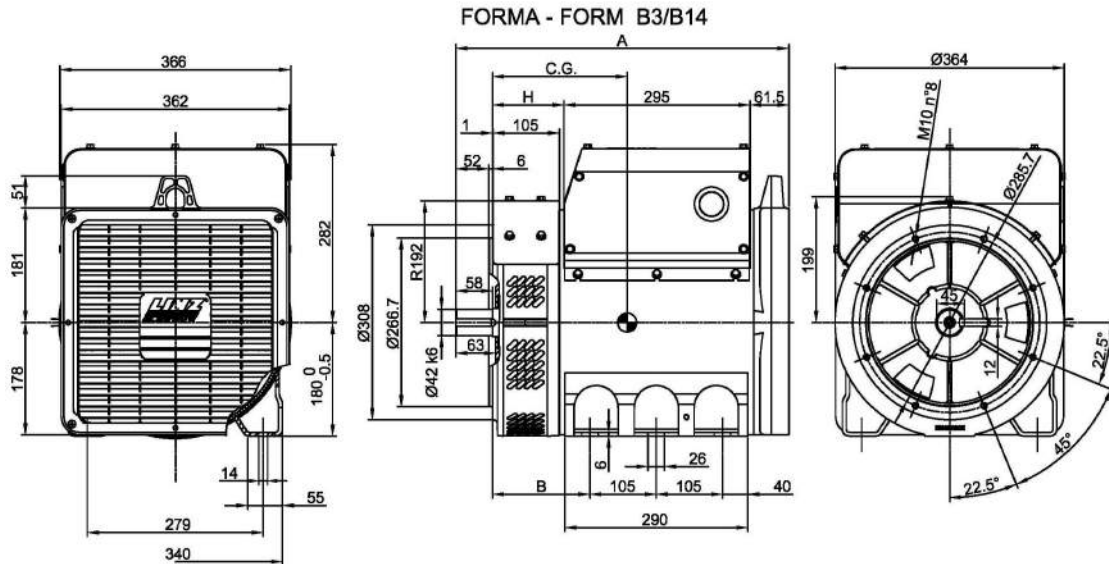
**EFFICIENCY 50Hz**



**EFFICIENCY 60Hz**



# PRO18S C/4



| FORMA - FORM |         | A   | B   | H     |
|--------------|---------|-----|-----|-------|
| B3/B14       | PRO 18S | 528 | 155 | 113.5 |
|              | PRO 18M | 598 | 155 | 183.5 |
|              | PRO 18L | 710 | 260 | 295.5 |
| MD35         | PRO 18S | 460 | 145 | 103.5 |
|              | PRO 18M | 530 | 145 | 173.5 |
|              | PRO 18L | 642 | 250 | 285.5 |

| TIPO - TYPE       | C.G. | TIPO - TYPE     | C.G. |
|-------------------|------|-----------------|------|
| PRO18S A/4 B3/B14 | 217  | PRO18S A/4 MD35 | 213  |
| PRO18S B/4 B3/B14 | 221  | PRO18S B/4 MD35 | 217  |
| PRO18S C/4 B3/B14 | 228  | PRO18S C/4 MD35 | 223  |
| PRO18M D/4 B3/B14 | 251  | PRO18M D/4 MD35 | 246  |
| PRO18M E/4 B3/B14 | 262  | PRO18M E/4 MD35 | 257  |
| PRO18L F/4 B3/B14 | 301  | PRO18L F/4 MD35 | 296  |
| PRO18L G/4 B3/B14 | 318  | PRO18L G/4 MD35 | 313  |

| SAE N. | FLANGIE - FLANGES - BRIDAS |       |       |                   |    |     |
|--------|----------------------------|-------|-------|-------------------|----|-----|
|        | Ø O                        | Ø P   | Ø Q   | n. fori holes No. | S  | α   |
| 5      | 356                        | 314.3 | 333.4 | 8                 | 11 | 45° |
| 4      | 402                        | 362   | 381   | 12                |    | 30° |
| 3      | 451                        | 409.6 | 428.6 | 12                |    | 30° |
| 2      | 490                        | 447.7 | 466.7 | 12                |    | 30° |

| SAE N. | GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS |        |        |                   |      |     |     |
|--------|---|--------|--------|-------------------|------|-----|-----|
|        | L   | Ø d    | Ø Q1   | n. fori holes No. | S1   | α1  | R   |
| 6 1/2  | 30.2  | 215.9  | 200    | 6                 | 9    | 60° | 4.5 |
| 7 1/2  | 30.2  | 241.3  | 222.25 | 8                 | 9    | 45° |     |
| 8      | 62  | 263.52 | 244.47 | 6                 | 10.5 | 60° |     |
| 10     | 53.8  | 314.32 | 295.27 | 8                 | 10.5 | 45° |     |
| 11 1/2 | 39.6  | 352.42 | 333.37 | 8                 | 10.5 | 45° |     |