

TECHNICAL DATA SHEET



ALTERNATOR PRO28S D/4

Three-Phase brushless synchronous alternator with AVR - 4 poles

PRO28S D/4

COMMON DATA

| | | |
|----------------------|---------------------|--|
| Rated Power at 50Hz | kVA | 250 |
| Rated Power at 60Hz | kVA | 300 |
| Rated Power Factor | | 0,8 |
| Nominal Temperature | °C | 40 |
| Control System | | self-excited |
| Execution | | brushless |
| Regulation Type | | AVR |
| Insulation Class | | H |
| Protection | | IP23 |
| Maximum Over speed | rpm | 2250 |
| Overload | | 110% of rated power for one hour in a cycle of 6 hours |
| Air Flow Requirement | m ³ /min | 36,5 at 50Hz 43,1 at 60Hz |
| R.F.I. Suppression | | Standard EN55011 |

REGULATION DATA

| | |
|-------------------------|-------------------------|
| AVR | HVR30 |
| Sensing | three-phase |
| Voltage Regulation | ±1% |
| Sustained Short Circuit | > 300% 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 | Ω | 0,0069 at 20°C |
| Rotor Winding Resistance | Ω | 2,26 at 20°C |
| Exciter Stator Resistance | Ω | 15 at 20°C |
| Exciter Rotor Resistance | Ω | 0,25 at 20°C |
| THD at full load | <3% | |
| THD at no load | <3% | |
| Excitation at no load | A _{dc} | 0,62 |
| Excitation at full load | A _{dc} | 2,3 |

STANDARD

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

ON REQUEST

UL 1446, Systems of Insulating Materials - General CSA-C22.2 No. 0, Appendix B, General Requirements - Canadian Electrical Code, Part I

PRO28S D/4

ELECTRICAL DATA

| Frequency | | 50Hz - 1500rpm | | | | 60Hz - 1800rpm | | | |
|--|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Voltage Series Star | V | 380/220 | 400/230 | 415/240 | 440/254 | 415/240 | 440/254 | 460/266 | 480/277 |
| Rated Power in Class H (125°C/40°C) | kVA | 250 | 250 | 250 | 235 | 290 | 300 | 300 | 300 |
| | kW | 200 | 200 | 200 | 188 | 232 | 240 | 240 | 240 |
| Rated Power in Class F (105°C/40°C) | kVA | 210 | 210 | 210 | 197 | 240 | 250 | 250 | 250 |
| | kW | 168 | 168 | 168 | 157,6 | 192 | 200 | 200 | 200 |
| Rated Power Standby (150°C/40°C) | kVA | 266 | 266 | 266 | 250 | 310 | 320 | 320 | 320 |
| | kW | 212,8 | 212,8 | 212,8 | 200 | 248 | 256 | 256 | 256 |
| Rated Power Standby (163°C/27°C) | kVA | 280 | 280 | 280 | 260 | 320 | 335 | 335 | 335 |
| | kW | 224 | 224 | 224 | 208 | 256 | 268 | 268 | 268 |

EFFICIENCY IN CL. H

| | | | | | | | | |
|-----|-------|--|--|--|--|--|--|-------|
| 4/4 | 92,7% | | | | | | | 93,2% |
| 3/4 | 93,1% | | | | | | | 93,6% |
| 2/4 | 92,0% | | | | | | | 92,5% |
| 1/4 | 89,3% | | | | | | | 90,1% |

REACTANCES AND TIME CONSTANTS

| | | | | | | | | | |
|--|--|--------|-------|-------|-------|-------|-------|-------|-------|
| pcc | | 0,38 | | | | | | | |
| X _d - dir. axis synchronous | | 388% | 350% | 325% | 272% | 453% | 417% | 381% | 350% |
| X' _d - dir. axis transient | | 19,9% | 18,0% | 16,7% | 14,0% | 23,3% | 21,4% | 19,6% | 18,0% |
| X'' _d - dir. axis subtransient | | 11,1% | 10,0% | 9,3% | 7,8% | 12,9% | 11,9% | 10,9% | 10,0% |
| X _q - quad. axis reactance | | 235% | 212% | 197% | 165% | 274% | 252% | 231% | 212% |
| T' _{do} - O.C. field time constant | | 1850ms | | | | | | | |
| T' _d - Transient time constant | | 115ms | | | | | | | |
| T'' _d - Sub-transient time constant | | 14ms | | | | | | | |

MECHANICAL DATA

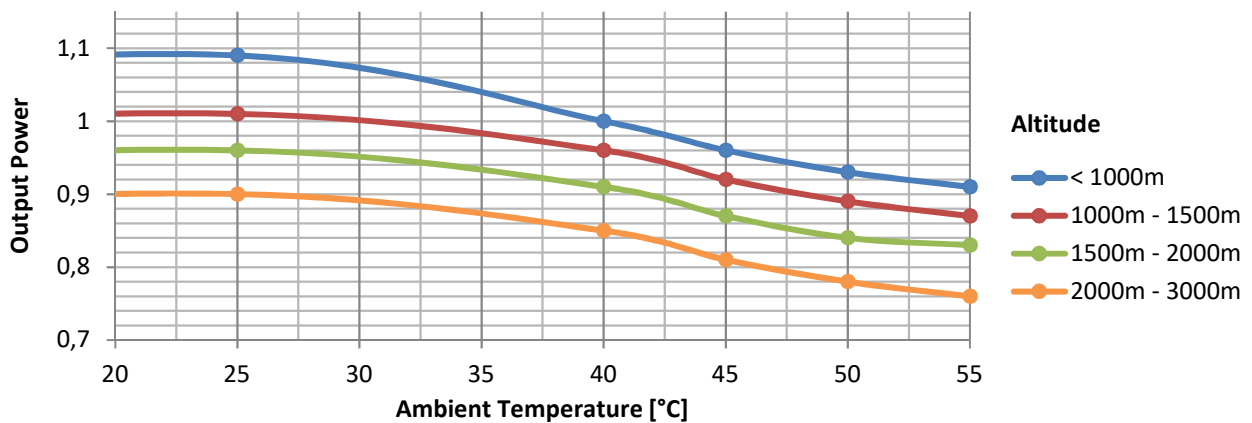
| | | | |
|---------------------------------|-----------|----|-------------|
| Bearing non drive end | | | 6314-2RS-C3 |
| Bearing drive end (B3/B14 form) | | | 6316-2RS-C3 |
| Weight of generator | in B2 | kg | 730,5 |
| | in B3/B14 | kg | 741,5 |
| | in B3/B9 | kg | \ |

PRO28S D/4

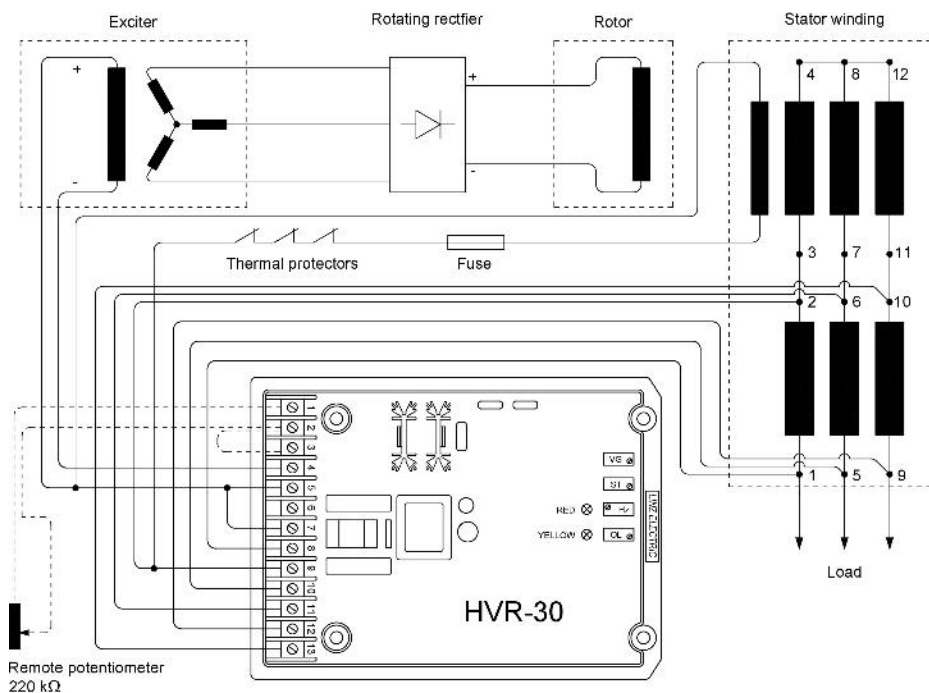
MOMENT OF INERZIA

| | | |
|---------|-------------------|-------|
| B3/B9 | kg·m ² | \ |
| SAE 7½ | kg·m ² | \ |
| SAE 8 | kg·m ² | \ |
| SAE 10 | kg·m ² | \ |
| SAE 11½ | kg·m ² | 3,252 |
| SAE 14 | kg·m ² | 3,368 |
| SAE 18 | kg·m ² | \ |
| B3/B14 | kg·m ² | 3,073 |

DERATING CURVES



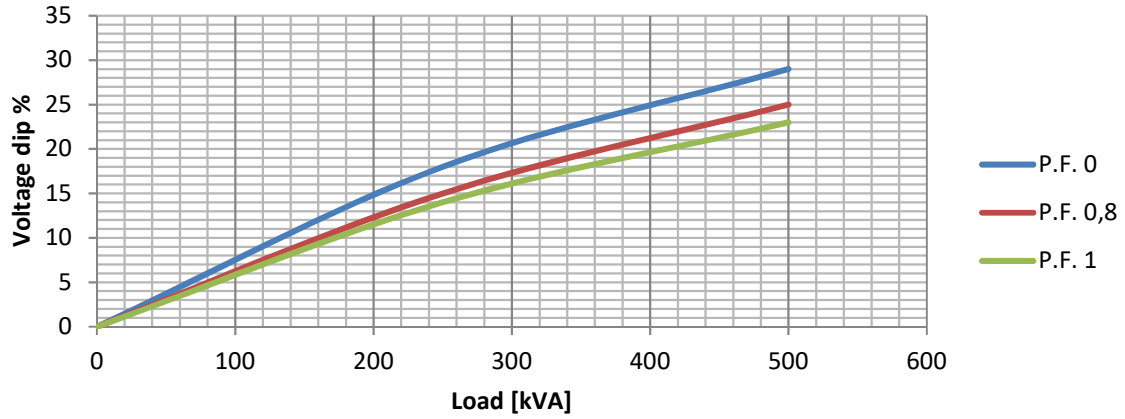
WIRING DIAGRAM



PRO28S D/4

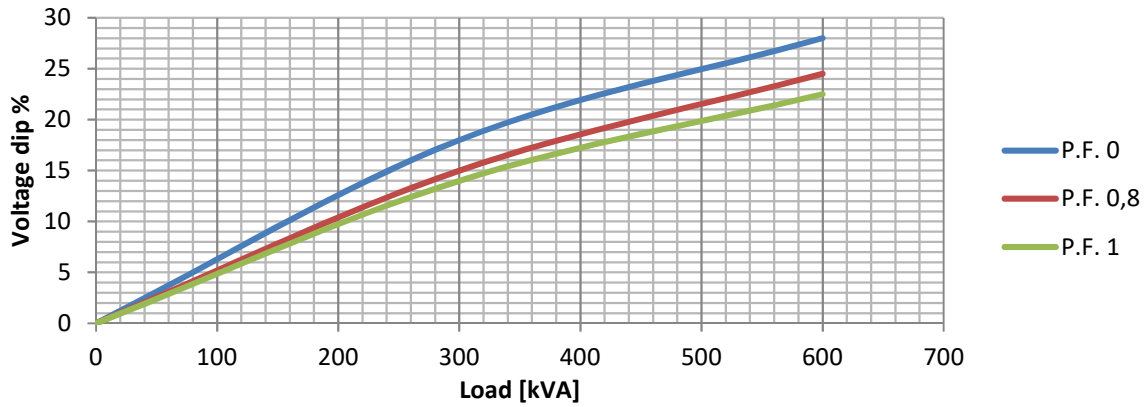
TRANSIENT VOLTAGE VARIATION 50Hz

Transient Voltage Variation @ 50Hz



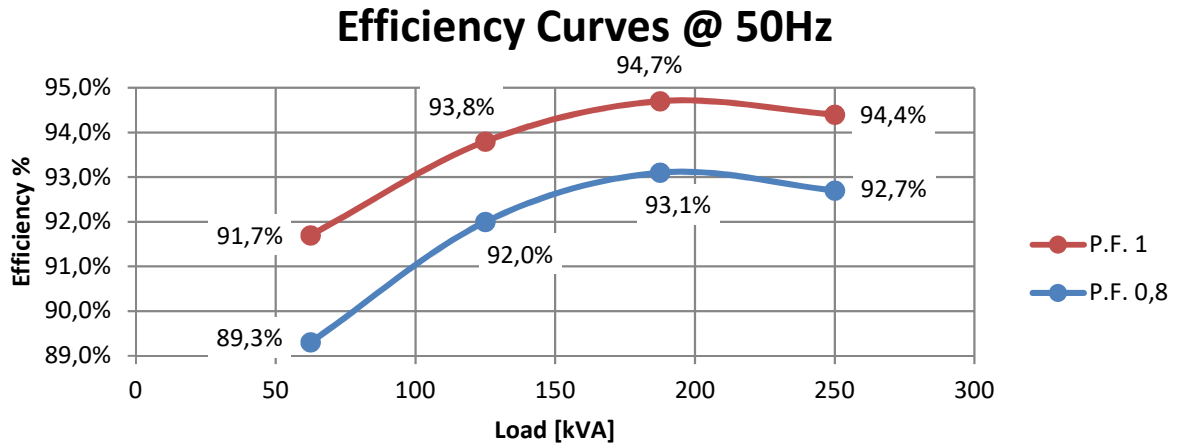
TRANSIENT VOLTAGE VARIATION 60Hz

Transient Voltage Variation @ 60Hz

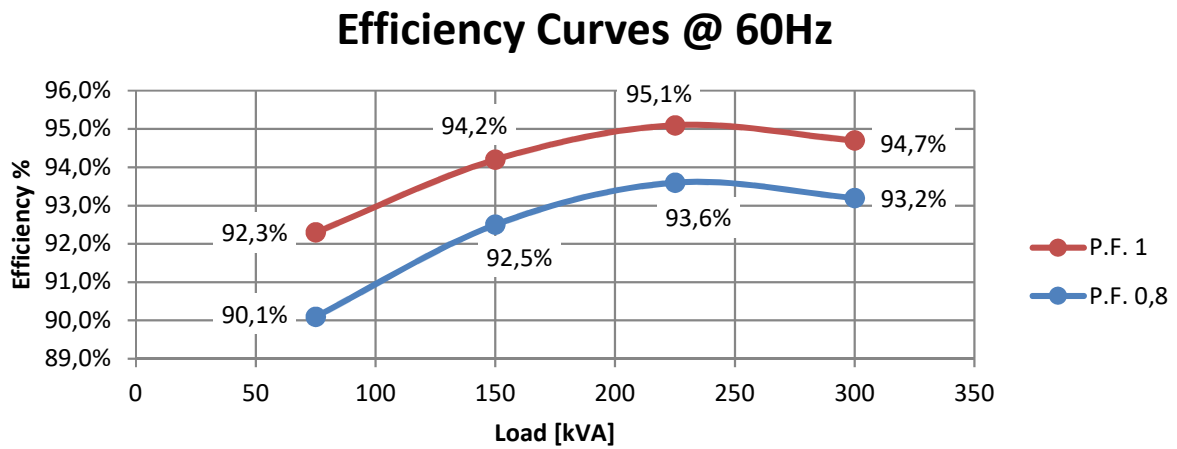


PRO28S D/4

EFFICIENCY 50Hz

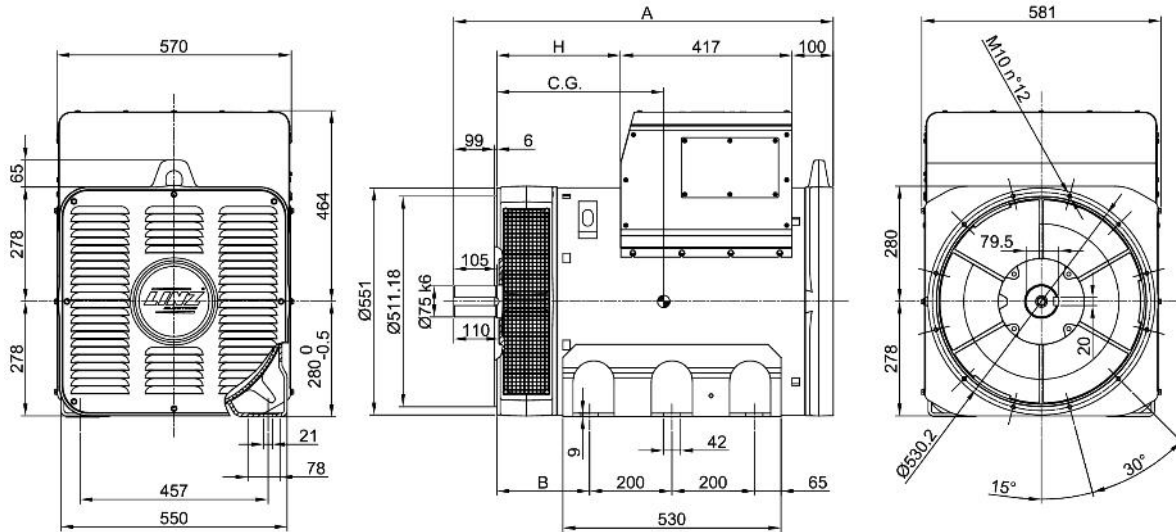


EFFICIENCY 60Hz

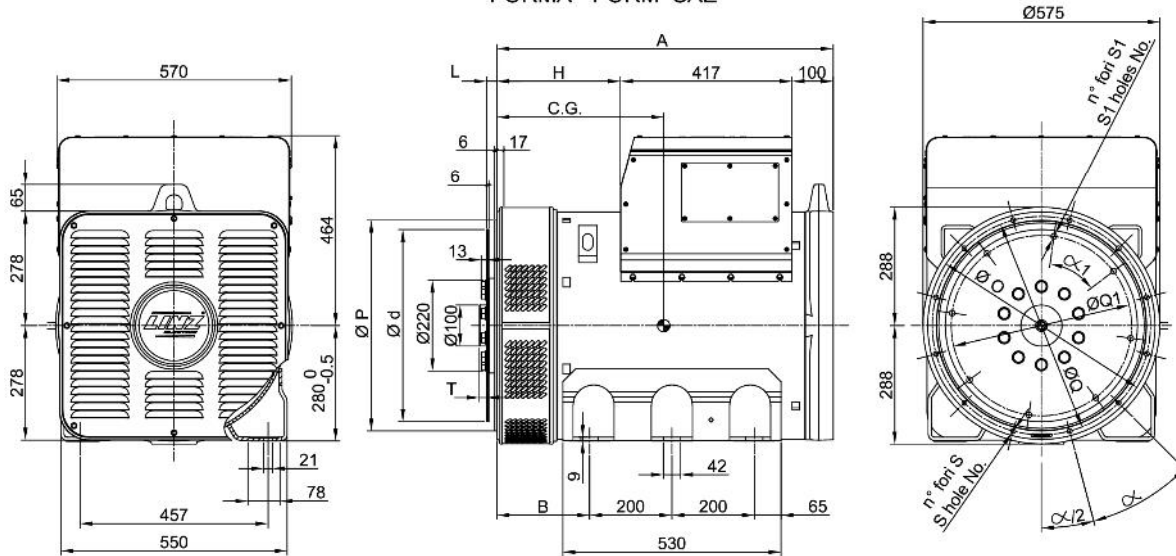


PRO28S D/4

FORMA - FORM B3/B14



FORMA - FORM SAE



| FORMA - FORM | | A | B | H |
|--------------|---------|------|-----|-----|
| B3/B14 | PRO 28S | 922 | 225 | 300 |
| | PRO 28M | 1072 | | 450 |
| | PRO 28L | 1137 | 325 | 515 |
| SAE | PRO 28S | 817 | 225 | 300 |
| | PRO 28M | 967 | | 450 |
| | PRO 28L | 1032 | 325 | 515 |

| TIPO - TYPE | C.G. |
|-------------|------|
| PRO28S A/4 | 376 |
| PRO28S B/4 | 380 |
| PRO28S C/4 | 394 |
| PRO28S D/4 | 406 |
| PRO28M E/4 | 452 |
| PRO28M F/4 | 480 |
| PRO28L G/4 | 513 |

| SAE N. | FLANGIE - FLANGES - BRIDAS | | | | | |
|--------|----------------------------|--------|-------|-------------------|----|-----|
| | Ø O | Ø P | Ø Q | n. fori holes No. | S | α |
| 3 | 451 | 409.6 | 428.6 | 12 | 12 | 30° |
| 2 | 490 | 447.68 | 466.7 | | | |
| 1 | 552 | 511.18 | 530.2 | | | |

| SAE N. | GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS | | | | | | |
|--------|---|--------|--------|-------------------|------|-----|------|
| | L | Ø d | Ø Q1 | n. fori holes No. | S1 | α1 | T |
| 11 1/2 | 39.6 | 352.42 | 333.37 | 8 | 10.5 | 45° | 0 |
| 14 | 25.4 | 466.72 | 438.15 | 8 | 14 | 45° | 17.3 |