

TECHNICAL DATA SHEET



ALTERNATOR PRO18M E/4

Three-Phase brushless synchronous alternator with AVR - 4 poles

PRO18M E/4

COMMON DATA

| | | | |
|----------------------|---------------------|--|------------|
| Rated Power at 50Hz | kVA | 42 | |
| Rated Power at 60Hz | kVA | 50 | |
| 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 | 9,8 at 50Hz | 11 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 | > 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 | 0,068 at 20°C | |
| Rotor Winding Resistance | Ω | 3,74 at 20°C | |
| Exciter Stator Resistance | Ω | 15 at 20°C | |
| Exciter Rotor Resistance | Ω | 0,72 at 20°C | |
| THD at full load | <3% | | |
| THD at no load | <3% | | |
| Excitation at no load | Adc | 0,92 | |
| Excitation at full load | Adc | 2,4 | |

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
 CAN/CSA - C22.2 No. 100-14 (R2009) Motors and Generators, UL1004-1 2nd ed. Rotating Electrical Machines - General Requirements, UL1004-4 2nd ed. Electric Generators

PRO18M E/4

ELECTRICAL DATA

| Frequency | | 50Hz - 1500rpm | | | | | 60Hz - 1800rpm | | | | |
|--|-----|----------------|-------------------------------------|--------------------|--------------------|--------------------|-------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Voltage | V | Double Delta | Series High Wye Parallel Low Wye | | | Double Delta | Series High Wye Parallel Low Wye | | | | |
| | | 115/230 | 380/220 190/110 | 400/230 200/115 | 415/240 208/120 | 440/254 220/127 | 138/277 | 415/240 208/120 | 440/254 220/127 | 460/266 230/133 | 480/277 240/154 |
| Rated Power in Class H (125°C/40°C) | kVA | 27 | 42 | 42 | 42 | 36 | 32 | 48 | 50 | 50 | 50 |
| | kW | 21,6 | 33,6 | 33,6 | 33,6 | 28,8 | 25,6 | 38,4 | 40 | 40 | 40 |
| Rated Power in Class F (105°C/40°C) | kVA | 24,5 | 39 | 39 | 39 | 32 | 29 | 45 | 47 | 47 | 47 |
| | kW | 19,6 | 31,2 | 31,2 | 31,2 | 25,6 | 23,2 | 36 | 37,6 | 37,6 | 37,6 |
| Rated Power Standby (150°C/40°C) | kVA | 29 | 47 | 47 | 45 | 42 | 35 | 50 | 53 | 55 | 55 |
| | kW | 23,2 | 37,6 | 37,6 | 36 | 33,6 | 28 | 40 | 42,4 | 44 | 44 |
| Rated Power Standby (163°C/27°C) | kVA | 30,5 | 48 | 48 | 46 | 44 | 36 | 52 | 55 | 57 | 57 |
| | kW | 24,4 | 38,4 | 38,4 | 36,8 | 35,2 | 28,8 | 41,6 | 44 | 45,6 | 45,6 |

EFFICIENCY IN CL. H

| | | | | | | | | | | |
|-----|--|--|-------|--|--|--|--|--|--|-------|
| 4/4 | | | 89,3% | | | | | | | 91,1% |
| 3/4 | | | 89,9% | | | | | | | 91,7% |
| 2/4 | | | 86,3% | | | | | | | 87,8% |
| 1/4 | | | 81,1% | | | | | | | 83,4% |

REACTANCES AND TIME CONSTANTS

| | | | | | | | | | | |
|------------------|-------------------------------|-------|-------|-------|-------|--|-------|-------|-------|-------|
| pcc | | 0,60 | | | | | | | | |
| X _d | - dir. axis synchronous | 280% | 253% | 235% | 179% | | 325% | 301% | 275% | 253% |
| X' _d | - dir. axis transient | 22,2% | 20,0% | 18,6% | 14,2% | | 25,7% | 23,8% | 21,8% | 20,0% |
| X'' _d | - dir. axis subtransient | 8,9% | 8,0% | 7,4% | 5,7% | | 10,3% | 9,5% | 8,7% | 8,0% |
| X _q | - quad. axis reactance | 156% | 141% | 131% | 100% | | 181% | 168% | 154% | 141% |
| T' _{do} | - O.C. field time constant | 180ms | | | | | | | | |
| T' _d | - Transient time constant | 14ms | | | | | | | | |
| T'' _d | - Sub-transient time constant | 8ms | | | | | | | | |

MECHANICAL DATA

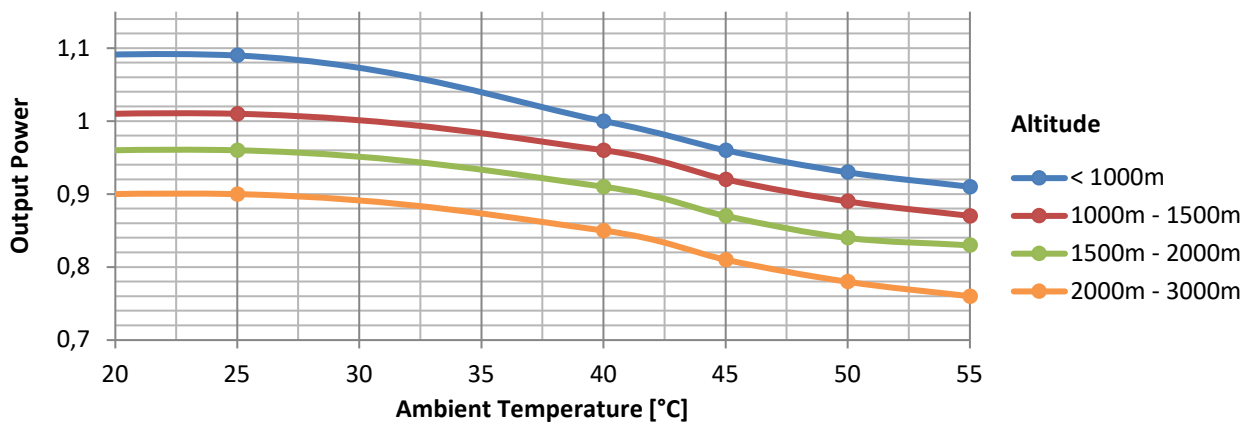
| | | | |
|---------------------------------|-----------|----|-------------|
| Bearing non drive end | | | 6307-2RS-C3 |
| Bearing drive end (B3/B14 form) | | | 6309-2RS-C3 |
| Weight of generator | in B2 | kg | 200 |
| | in B3/B14 | kg | 202 |
| | in B3/B9 | kg | \ |

PRO18M E/4

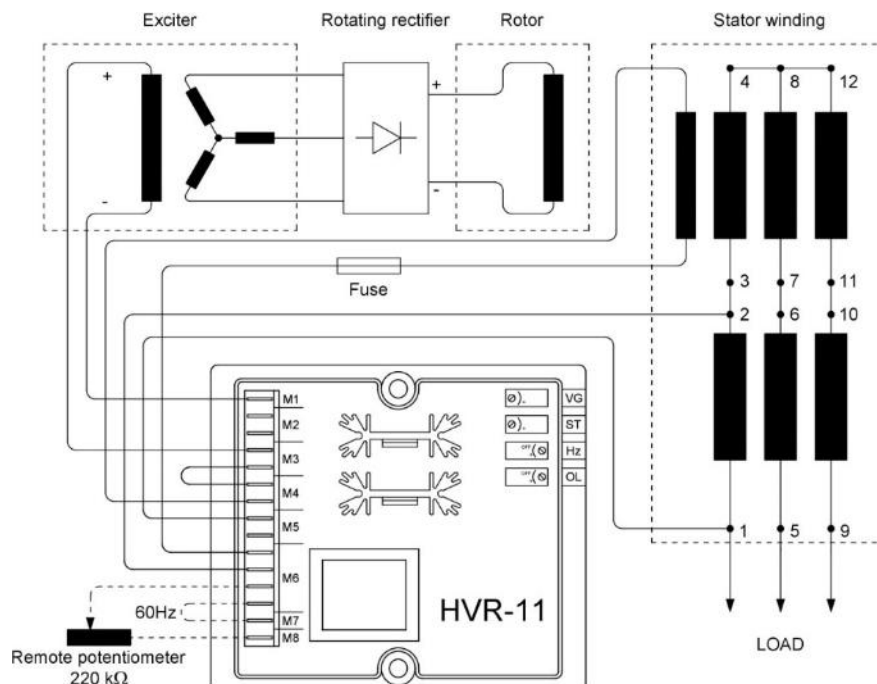
MOMENT OF INERZIA

| | | |
|---------|-------------------|-------|
| B3/B9 | kg·m ² | \ |
| SAE 7½ | kg·m ² | 0,369 |
| SAE 8 | kg·m ² | 0,378 |
| SAE 10 | kg·m ² | 0,395 |
| SAE 11½ | kg·m ² | 0,415 |
| SAE 14 | kg·m ² | \ |
| SAE 18 | kg·m ² | \ |
| B3/B14 | kg·m ² | 0,367 |

DERATING CURVES



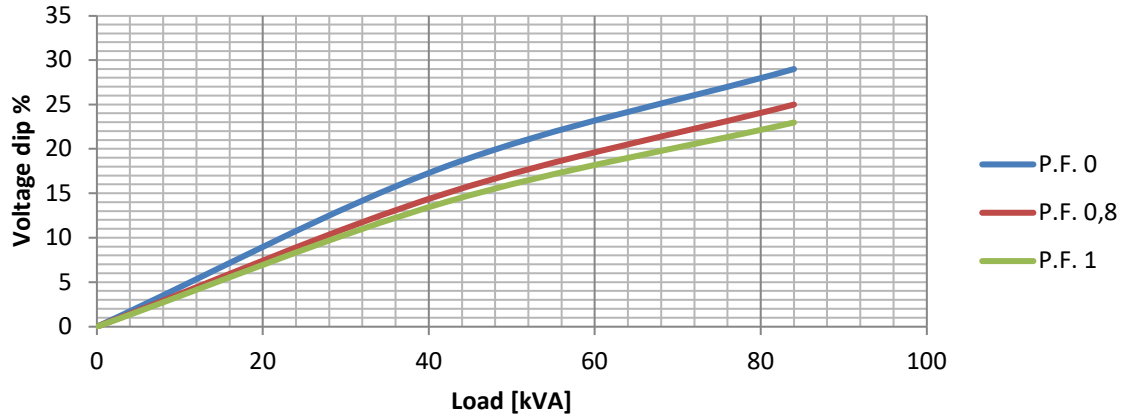
WIRING DIAGRAM



PRO18M E/4

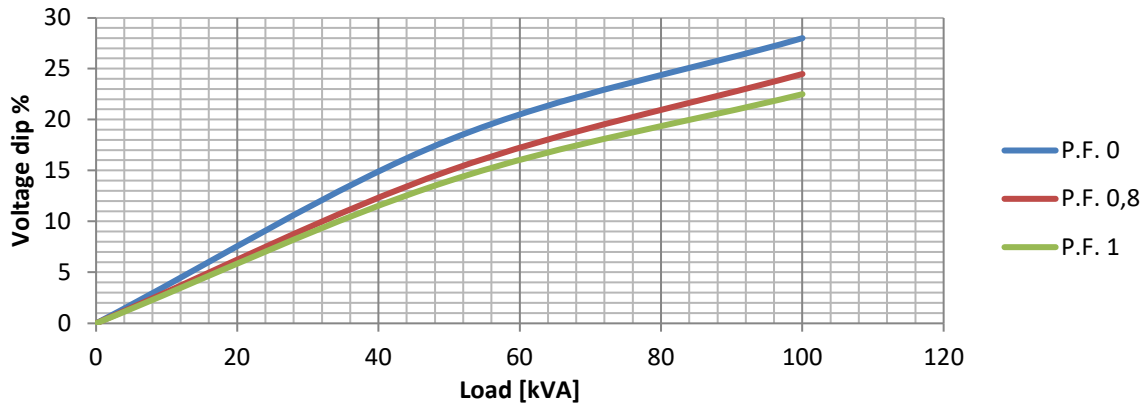
TRANSIENT VOLTAGE VARIATION 50Hz

Transient Voltage Variation @ 50Hz



TRANSIENT VOLTAGE VARIATION 60Hz

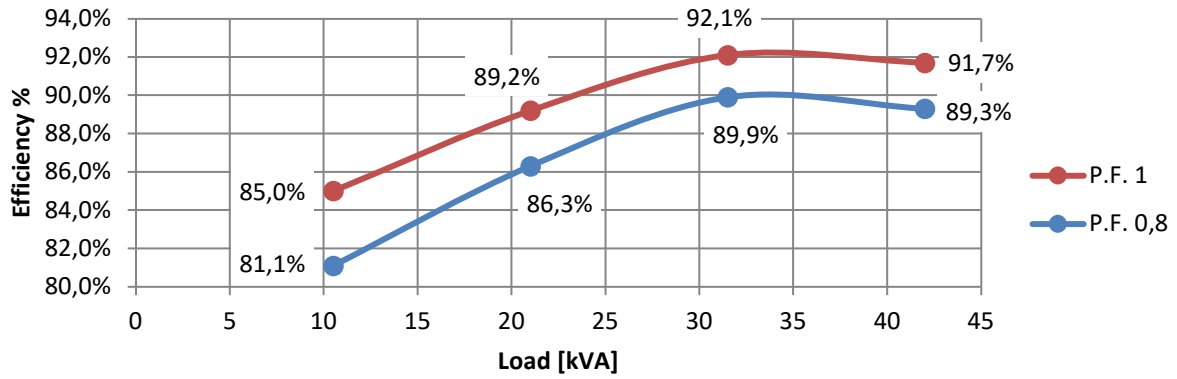
Transient Voltage Variation @ 60Hz



PRO18M E/4

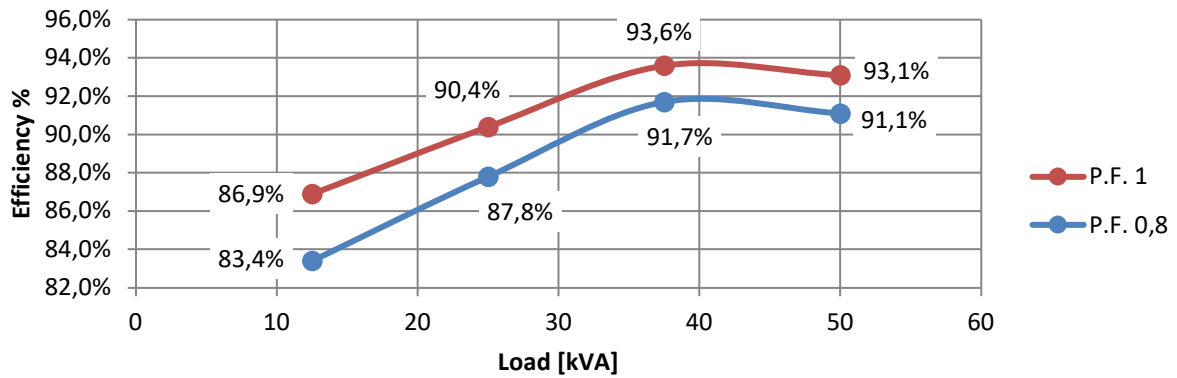
EFFICIENCY 50Hz

Efficiency Curves @ 50Hz



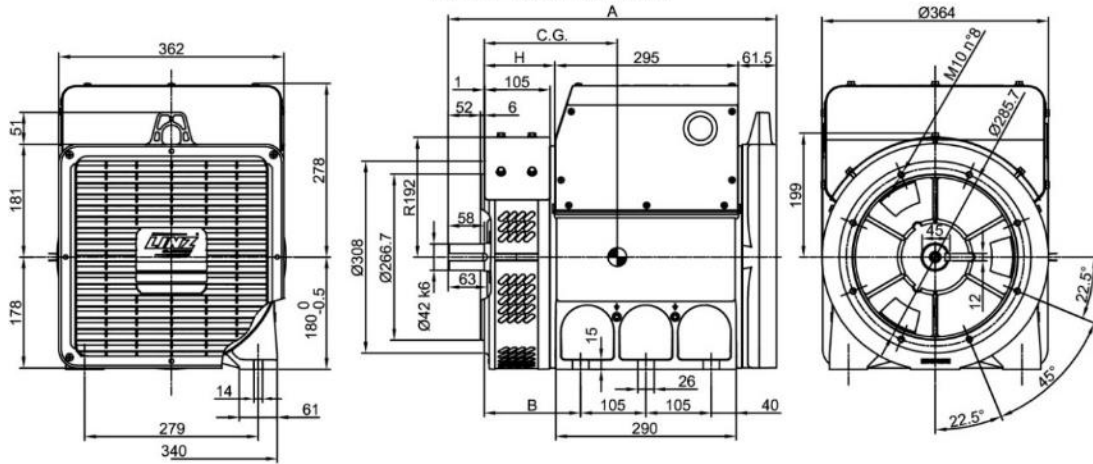
EFFICIENCY 60Hz

Efficiency Curves @ 60Hz

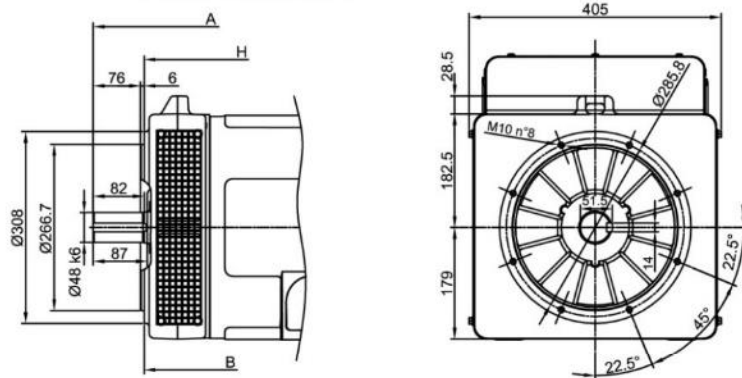


PRO18M E/4

FORMA - FORM B3/B14 'S-M'



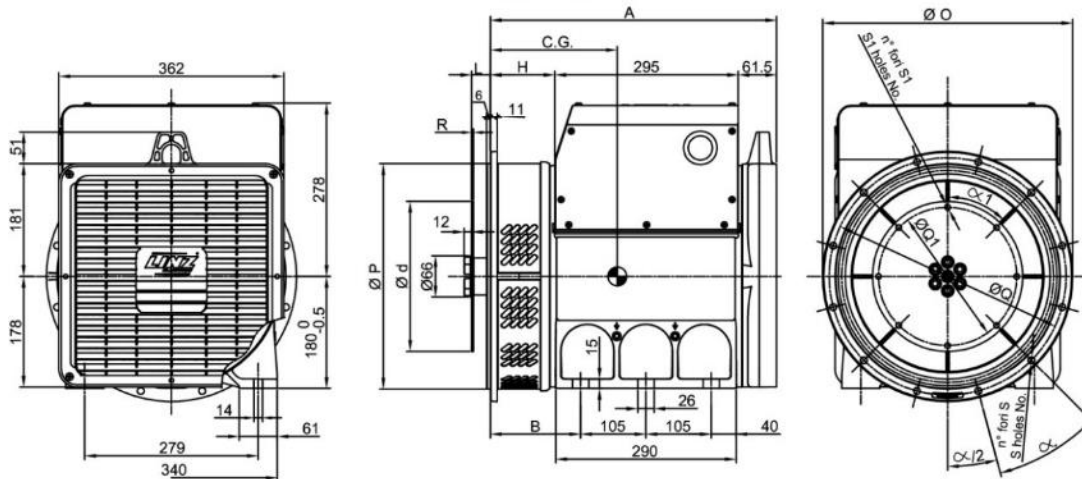
FORMA - FORM B3/B14 'L'



| TIPO - TYPE | C.G. |
|-------------------|------|
| PRO18S A/4 B3/B14 | 217 |
| PRO18S B/4 B3/B14 | 221 |
| PRO18S C/4 B3/B14 | 228 |
| PRO18M D/4 B3/B14 | 251 |
| PRO18M E/4 B3/B14 | 262 |
| PRO18L F/4 B3/B14 | 301 |
| PRO18L G/4 B3/B14 | 318 |

| TIPO - TYPE | C.G. |
|----------------|------|
| PRO18S A/4 SAE | 213 |
| PRO18S B/4 SAE | 217 |
| PRO18S C/4 SAE | 223 |
| PRO18M D/4 SAE | 246 |
| PRO18M E/4 SAE | 257 |
| PRO18L F/4 SAE | 296 |
| PRO18L G/4 SAE | 313 |

FORMA - FORM SAE



| FORMA - FORM | A | B | H |
|--------------|---------|-----|-------|
| B3/B14 | PRO 18S | 528 | 113,5 |
| | PRO 18M | 598 | 183,5 |
| | PRO 18L | 734 | 295,5 |
| SAE | PRO 18S | 460 | 103,5 |
| | PRO 18M | 530 | 173,5 |
| | PRO 18L | 642 | 285,5 |

| 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 | | | |
| 2 | 490 | 447,7 | 466,7 | | | |

| SAE N. | GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS | | | | | | |
|--------|---|--------|--------|-------------------|------|-----|-----|
| | L | Ø d | Ø Q1 | n. fori holes No. | S1 | α 1 | R |
| 6 1/2 | 30,2 | 215,9 | 200 | 6 | 9 | 60° | 3 |
| 7 1/2 | | 241,3 | 222,25 | 8 | | 45° | |
| 8 | 62 | 263,52 | 244,47 | 6 | 10,5 | 60° | 4,5 |
| 10 | 53,8 | 314,32 | 295,27 | 8 | | 45° | |
| 11 1/2 | 39,6 | 352,42 | 333,37 | | | | |