



| <b>Type Test Report</b>                                                                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | Date of issue: 4.11.2015                                |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------|------------|------------------------------------------------------------------------|--------------------|---------------|------------|----|-------|---|------------|------|-----|------|-------|------|-------|------|----|-----|------|-------|------|-------|------|----|-----|------|-------|------|-------|------|----|
| Customer:                                                                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | Serial No.:                                             |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Customer ref.:                                                                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | Type: M3AA 132 SMG 2 HO<br>Product Code: 3GAA131270-_SE |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Rating:                                                                                                                                   |             | <table border="1"> <thead> <tr> <th>V</th> <th>Hz</th> <th>kW</th> <th>r/min</th> <th>A</th> <th><math>\eta</math> [%]</th> <th>Duty</th> </tr> </thead> <tbody> <tr> <td>400</td> <td>Y 50</td> <td>15,00</td> <td>2905</td> <td>28,50</td> <td>0,84</td> <td>S1</td> </tr> <tr> <td>230</td> <td>D 50</td> <td>15,00</td> <td>2905</td> <td>46,90</td> <td>0,84</td> <td>S1</td> </tr> <tr> <td>460</td> <td>Y 60</td> <td>15,00</td> <td>3510</td> <td>23,60</td> <td>0,89</td> <td>S1</td> </tr> </tbody> </table> |       |                                                         |            |                                                                        |                    | V             | Hz         | kW | r/min | A | $\eta$ [%] | Duty | 400 | Y 50 | 15,00 | 2905 | 28,50 | 0,84 | S1 | 230 | D 50 | 15,00 | 2905 | 46,90 | 0,84 | S1 | 460 | Y 60 | 15,00 | 3510 | 23,60 | 0,89 | S1 |
| V                                                                                                                                         | Hz          | kW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | r/min | A                                                       | $\eta$ [%] | Duty                                                                   |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| 400                                                                                                                                       | Y 50        | 15,00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2905  | 28,50                                                   | 0,84       | S1                                                                     |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| 230                                                                                                                                       | D 50        | 15,00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2905  | 46,90                                                   | 0,84       | S1                                                                     |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| 460                                                                                                                                       | Y 60        | 15,00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3510  | 23,60                                                   | 0,89       | S1                                                                     |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| 3-Motor<br>Insul.cl.F<br>IP55<br><br>Eff class IE2                                                                                        |             | 50Hz : IE2 - 90,4%(100%) - 90,8%(75%) - 90,0%(50%)<br>60Hz : IE2 - 90,7%(100%)                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |                                                         |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Resistance Line                                                                                                                           |             | Ambient: 20,0 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       | Insulation resistance at 21 °C<br>R > 2000 Mohm 1000 V  |            | Overload<br>Current 150 % 120s<br>Torque 160 % 15s<br>Speed 120 % 120s |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| $U_1 - V_1$<br>$U_1 - W_1$<br>$V_1 - W_1$                                                                                                 |             | 0,36000 $\Omega$<br>0,36000 $\Omega$<br>0,36100 $\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       | High-voltage test winding 2400 V 60 s                   |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Test                                                                                                                                      | Torque [Nm] | Line U[V]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | f[Hz] | Input I[A]                                              | P1 [kW]    | Output P2 [kW]                                                         | n[r/min]           | cos $\varphi$ | $\eta$ [%] |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| No load test                                                                                                                              |             | 400 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50    | 9,2                                                     | 0,51       |                                                                        | 3000               | 0,08          |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Locked rotor test                                                                                                                         |             | 59,9 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 50    | 27,0                                                    | 1,16       |                                                                        | 0                  | 0,41          |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Thermal test ( 100% load )                                                                                                                | 49,4        | 400 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50    | 27,2                                                    | 16,63      | 15,00                                                                  | 2897               | 0,88          | 90,20      |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Partial load points:                                                                                                                      |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |                                                         |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| ~75% load                                                                                                                                 | 36,7        | 400 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50    | 21,2                                                    | 12,39      | 11,25                                                                  | 2925               | 0,84          | 90,80      |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| ~50% load                                                                                                                                 | 24,3        | 400 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50    | 15,7                                                    | 8,30       | 7,50                                                                   | 2952               | 0,76          | 90,40      |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| ~25% load                                                                                                                                 | 12,0        | 400 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50    | 11,2                                                    | 4,35       | 3,75                                                                   | 2979               | 0,56          | 86,30      |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Temperature rise at rated load.                                                                                                           |             | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       | [K]                                                     | Method     |                                                                        | Measurement method |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Stator winding :                                                                                                                          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | 78,0                                                    | 3          |                                                                        | 1 Resistance       |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Frame :                                                                                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | 27,0                                                    | 3          |                                                                        | 2 Thermometer      |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Bearing D-end :                                                                                                                           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | 40,0                                                    | 3          |                                                                        | 3 Thermocouples    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Ambient Temperature :                                                                                                                     |             | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |       |                                                         | 3          |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| These tests have been carried out on motor no. 3GE074513T0329, on date 2007-11-20 which is identical in electrical design with the above. |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |                                                         |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Manufactured and tested in accordance with rules of IEC 60034-1 and IEC 60034-2-1.<br>PLL determined from residual loss.                  |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |                                                         |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| On behalf of customer                                                                                                                     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |                                                         |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| On behalf of manufacturer                                                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | Date of test                                            |            |                                                                        |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |
| Tested by Asea Brown Boveri, S.A., Fabrica Motores , 08192 Sant Quirze del Valles , Spain                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |                                                         |            | Telephone +34 93 728 85 00<br>Telefax +34 93 728 85 33                 |                    |               |            |    |       |   |            |      |     |      |       |      |       |      |    |     |      |       |      |       |      |    |     |      |       |      |       |      |    |

Computer print-out valid without signature.