



| <b>Test Report</b>                                                                                                                         |             |           |        | Date of issue: 19.5.2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|----------|-------|-------|-----|--------|------------------|-------|------|-----|---------|----|------|------|-----------------|---------|-----|---|-----------------------|------|------|------|---------|-----|---|----|------|------|------|---------|-----|---|----|------|------|------|---------|-----|---|----|------|------|------|---------|-----|---|----|------|------|------|---------|
| Customer:                                                                                                                                  |             |           |        | Serial No.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Customer ref.:                                                                                                                             |             |           |        | Order No.:<br>Type: M3KP 160MLA 2<br>Product Code: 3GKP161410-ADK<br>Protection type: Ex de IIB T4 Gb<br>Cert. No.: LCIE 11 ATEX 3087X / IECEx LCI 09.0008X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Rating:                                                                                                                                    |             |           |        | <table border="1"> <thead> <tr> <th>V</th> <th>Hz</th> <th>kW</th> <th>r/min</th> <th>A</th> <th>cos φ</th> <th>Duty</th> </tr> </thead> <tbody> <tr> <td>690</td> <td>Y</td> <td>50</td> <td>11,0</td> <td>2943</td> <td>10,8</td> <td>0,92 S1</td> </tr> <tr> <td>400</td> <td>D</td> <td>50</td> <td>11,0</td> <td>2943</td> <td>18,7</td> <td>0,92 S1</td> </tr> <tr> <td>660</td> <td>Y</td> <td>50</td> <td>11,0</td> <td>2934</td> <td>11,4</td> <td>0,93 S1</td> </tr> <tr> <td>380</td> <td>D</td> <td>50</td> <td>11,0</td> <td>2934</td> <td>19,6</td> <td>0,93 S1</td> </tr> <tr> <td>415</td> <td>D</td> <td>50</td> <td>11,0</td> <td>2948</td> <td>18,2</td> <td>0,91 S1</td> </tr> <tr> <td>460</td> <td>D</td> <td>60</td> <td>11,0</td> <td>3552</td> <td>16,5</td> <td>0,91 S1</td> </tr> </tbody> </table> |         |                |          | V     | Hz    | kW  | r/min  | A                | cos φ | Duty | 690 | Y       | 50 | 11,0 | 2943 | 10,8            | 0,92 S1 | 400 | D | 50                    | 11,0 | 2943 | 18,7 | 0,92 S1 | 660 | Y | 50 | 11,0 | 2934 | 11,4 | 0,93 S1 | 380 | D | 50 | 11,0 | 2934 | 19,6 | 0,93 S1 | 415 | D | 50 | 11,0 | 2948 | 18,2 | 0,91 S1 | 460 | D | 60 | 11,0 | 3552 | 16,5 | 0,91 S1 |
| V                                                                                                                                          | Hz          | kW        | r/min  | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | cos φ   | Duty           |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 690                                                                                                                                        | Y           | 50        | 11,0   | 2943                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10,8    | 0,92 S1        |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 400                                                                                                                                        | D           | 50        | 11,0   | 2943                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 18,7    | 0,92 S1        |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 660                                                                                                                                        | Y           | 50        | 11,0   | 2934                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 11,4    | 0,93 S1        |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 380                                                                                                                                        | D           | 50        | 11,0   | 2934                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 19,6    | 0,93 S1        |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 415                                                                                                                                        | D           | 50        | 11,0   | 2948                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 18,2    | 0,91 S1        |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 460                                                                                                                                        | D           | 60        | 11,0   | 3552                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 16,5    | 0,91 S1        |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| 3-Motor<br>Insul.cl.F<br>IP55<br>Eff class IE3                                                                                             |             |           |        | 50Hz : IE3-92,1(100%)-92,7(75%)-92,4(50%)<br>60Hz : IE3-91,8(100%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Resistance<br>Line<br>U <sub>1</sub> - V <sub>1</sub><br>U <sub>1</sub> - W <sub>1</sub><br>V <sub>1</sub> - W <sub>1</sub>                |             |           |        | Ambient: 22,2 °C<br>0,42360 Ω<br>0,42210 Ω<br>0,42240 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Insulation resistance at 22 °C<br>R > 2000 Mohm 1000 V                                                                                     |             |           |        | Overload<br>Current 150 % 120s<br>Torque 160 % 15s<br>Speed 120 % 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| High-voltage test winding 2400 V 60 s                                                                                                      |             |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Test                                                                                                                                       | Torque [Nm] | Line U[V] | f[Hz]  | Input I[A]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | P1 [kW] | Output P2 [kW] | η[r/min] | cos φ | η [%] |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| No load test                                                                                                                               |             | 401 D     | 50     | 5,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0,3     |                | 3000     | 0,08  |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Locked rotor test                                                                                                                          |             | 58 D      | 50     | 18,1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0,70    |                | 0        | 0,38  |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Thermal test ( 100% load )                                                                                                                 | 35,6        | 400 D     | 50     | 19,2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 11,93   | 11,00          | 2949     | 0,90  | 92,24 |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Partial load points:                                                                                                                       |             |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| ~75% load                                                                                                                                  | 30,4        | 400 D     | 50     | 16,7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10,21   | 9,46           | 2973     | 0,88  | 92,63 |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| ~50% load                                                                                                                                  | 23,8        | 400 D     | 50     | 13,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 8,01    | 7,43           | 2983     | 0,86  | 92,78 |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| ~25% load                                                                                                                                  | 16,2        | 400 D     | 50     | 10,1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5,50    | 5,08           | 2993     | 0,79  | 92,22 |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Temperature rise at rated load.                                                                                                            |             |           |        | <table border="1"> <thead> <tr> <th></th> <th>[°C]</th> <th>[K]</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td>Stator winding :</td> <td></td> <td>38,2</td> <td>1</td> </tr> <tr> <td>Frame :</td> <td></td> <td>17,6</td> <td>2</td> </tr> <tr> <td>Bearing D-end :</td> <td></td> <td>20</td> <td>2</td> </tr> <tr> <td>Ambient Temperature :</td> <td>22</td> <td></td> <td>2</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                           |         |                |          |       | [°C]  | [K] | Method | Stator winding : |       | 38,2 | 1   | Frame : |    | 17,6 | 2    | Bearing D-end : |         | 20  | 2 | Ambient Temperature : | 22   |      | 2    |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
|                                                                                                                                            | [°C]        | [K]       | Method |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Stator winding :                                                                                                                           |             | 38,2      | 1      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Frame :                                                                                                                                    |             | 17,6      | 2      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Bearing D-end :                                                                                                                            |             | 20        | 2      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Ambient Temperature :                                                                                                                      | 22          |           | 2      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Measurement method<br>1 Resistance<br>2 Thermometer<br>3 Thermocouples                                                                     |             |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| These tests have been carried out on motor no. 3GV1110796857001, on date 2011-10-5 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                                                                                                                               |             |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Telephone +46 (0)21 32 90 00<br>Telefax +46 (0)21 32 90 22                                                                                 |             |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |
| Tested by ABB AB, LV Motors, 721 70 Västerås, Sweden                                                                                       |             |           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |                |          |       |       |     |        |                  |       |      |     |         |    |      |      |                 |         |     |   |                       |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |     |   |    |      |      |      |         |

Computer print-out valid without signature.