

1.6 Efficiency classes IE1, IE2 and IE3

P _N in kW	IE1, 50 Hz			IE2, 50 Hz			IE3, 50 Hz		
	Number of Poles								
	2	4	6	2	4	6	2	4	6
0.75	72.1	72.1	70.0	77.4	79.6	75.9	80.7	82.5	78.9
1.1	75.0	75.0	72.9	79.6	81.4	78.1	82.7	84.1	81.0
1.5	77.2	77.2	75.2	81.3	82.8	79.8	84.2	85.3	82.5
2.2	79.7	79.7	77.7	83.2	84.3	81.8	85.9	86.7	84.3
3	81.5	81.5	79.7	84.6	85.5	83.3	87.1	87.7	85.6
4	83.1	83.1	81.4	85.8	86.6	84.6	88.1	88.6	86.8
5.5	84.7	84.7	83.1	87.0	87.7	86.0	89.2	89.6	88.0
7.5	86.0	86.0	84.7	88.1	88.7	87.2	90.1	90.4	89.1
11	87.6	87.6	86.4	89.4	89.8	88.7	91.2	91.4	90.3
15	88.7	88.7	87.7	90.3	90.6	89.7	91.9	92.1	91.2
18.5	89.3	89.3	88.6	90.9	91.2	90.4	92.4	92.6	91.7
22	89.9	89.9	89.2	91.3	91.6	90.9	92.7	93.0	92.2
30	90.7	90.7	90.2	92.0	92.3	91.7	93.3	93.6	92.9
37	91.2	91.2	90.8	92.5	92.7	92.2	93.7	93.9	93.3
45	91.7	91.7	91.4	92.9	93.1	92.7	94.0	94.2	93.7
55	92.1	92.1	91.9	93.2	93.5	93.1	94.3	94.6	94.1
75	92.7	92.7	92.6	93.8	94.0	93.7	94.7	95.0	94.6
90	93.0	93.0	92.9	94.1	94.2	94.0	95.0	95.2	94.9
110	93.3	93.3	93.3	94.3	94.5	94.3	95.2	95.4	95.1
132	93.5	93.5	93.5	94.6	94.7	94.6	95.4	95.6	95.4
160	93.8	93.8	93.8	94.8	94.9	94.8	95.6	95.8	95.6
200 – 375	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8

Table 1: Efficiency classes for 50 Hz in accordance with IEC 60034-30:2008

P _N in kW	IE1, 60 Hz			IE2, 60 Hz			IE3, 60 Hz		
	Number of Poles								
	2	4	6	2	4	6	2	4	6
0.75	77.0	78.0	73.0	75.5	82.5	80.0	77.0	85.5	82.5
1.1	78.5	79.0	75.0	82.5	84.0	85.5	84.0	86.5	87.5
1.5	81.0	81.5	77.0	84.0	84.0	86.5	85.5	86.5	88.5
2.2	81.5	83.0	78.5	85.5	87.5	87.5	86.5	89.5	89.5
3.7	84.5	85.0	83.5	87.5	87.5	87.5	88.5	89.5	89.5
5.5	86.0	87.0	85.0	88.5	89.5	89.5	89.5	91.7	91.0
7.5	87.5	87.5	86.0	89.5	89.5	89.5	90.2	91.7	91.0
11	87.5	88.5	89.0	90.2	91.0	90.2	91.0	92.4	91.7
15	88.5	89.5	89.5	90.2	91.0	90.2	91.0	93.0	91.7
18.5	89.5	90.5	90.2	91.0	92.4	91.7	91.7	93.6	93.0
22	89.5	91.0	91.0	91.0	92.4	91.7	91.7	93.6	93.0
30	90.2	91.7	91.7	91.7	93.0	93.0	92.4	94.1	94.1
37	91.5	92.4	91.7	92.4	93.0	93.0	93.0	94.5	94.1
45	91.7	93.0	91.7	93.0	93.6	93.6	93.6	95.0	94.5
55	92.4	93.0	92.1	93.0	94.1	93.6	93.6	95.4	94.5
75	93.0	93.2	93.0	93.6	94.5	94.1	94.1	95.4	95.0
90	93.0	93.2	93.0	94.5	94.5	94.1	95.0	95.4	95.0
110	93.0	93.5	94.1	94.5	95.0	95.0	95.0	95.8	95.8
150	94.1	94.5	94.1	95.0	95.0	95.0	95.4	96.2	95.8
185 – 375	94.1	94.5	94.1	95.4	95.4	95.0	95.8	96.2	95.8

Table 2: Efficiency classes for 60 Hz in accordance with IEC 60034-30:2008



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FAQs – MEPS Efficiency Levels

MEPS Requirements for Three Phase Electric Motors from .73kW to <185kW

Since October 1 2001, three phase electric motors from 0.73kW to <185kW manufactured in or imported into Australia must comply with Minimum Energy Performance (MEPS) requirements which are set out in AS/NZS 1359.5-2000. MEPS does not apply to submersible motors, integral motor-gear systems, variable or multi-speed motors or those rated only for short duty cycles (IEC 60034-2 duty rating S2). Rewound motors are not required to comply with MEPS.

The Minimum Energy Performance Standards requirements are set out as minimum efficiency levels. These are set out in the tables below for Test Method B (AS 1359.102.0) and test method A (AS/NSZ 1359.102.0).

From April 1 2006, MEPS levels for three phase electric motors were revised to become more stringent. The “High Efficiency” level from 2001 became the MEPS level on April 1 2006. From April 1 2005 a revised “High Efficiency” level came into force. These new MEPS and high efficiency requirements are set out in detail in AS/NZS 1359.5-2004 which we published in September 2004. This standard supersedes AS/ANZ 1359.5-200.

MEPS levels and “High Efficiency” levels are set out in the tables as follows:

- Table A1 – MEPS 2001, Test Method A
- Table A2 – MEPS 2006, Test Method A and “High Efficiency” 2001, Test Method A
- Table A3 – “High Efficiency” 2005, Test Method A
- Table B1 – MEPS 2001, Test Method B
- Table B2 – MEPS 2006, Test Method B and “High Efficiency” 2001, Test Method B
- Table 3 – “High Efficiency” 2005, Test Method B

Table A1 – Efficiency Levels for Three Phase Electric Motors Test Method A

Rated Output kW	Minimum Efficiency %			
	2 pole	4 pole	6 pole	8 pole
0.73	72.3	72.7	70.7	66.7
0.75	72.8	72.8	70.7	66.7
1.1	74.6	74.6	73.6	69.9
1.5	76.9	76.9	75.7	73.0
2.2	79.5	79.5	78.1	76.1
3	81.2	81.2	79.9	78.2
4	82.8	82.8	81.6	80.1
5.5	84.4	84.4	83.3	82.0
7.5	85.8	85.8	84.7	83.7
11	87.2	87.2	86.4	85.6
18	88.3	88.3	87.7	87.7
18.5	89.0	89.0	88.6	88.0
22	89.5	89.5	89.1	88.7
30	90.5	90.5	90.2	89.9
37	91.1	91.1	90.8	90.6
45	91.7	91.7	91.5	91.2
55	92.2	92.2	92.0	91.8
75	92.9	92.9	92.8	92.7
90	93.4	93.2	93.2	93.0
110	93.8	93.8	93.7	93.5
132	94.2	94.1	94.1	93.8
150	94.5	94.5	94.4	94.1
<185	94.5	94.5	94.4	94.1

NOTES:

1. For intermediate values of rated output, the efficiency shall be determined by linear interpolation.
2. Tolerance specified in table 1.1 of AS/NZS 1359.5 are applicable to above values only in the case of a verification test.

MEPS2 TEST METHOD A - TABLE A2 = IE2**Table A2 – Efficiency Levels for Three Phase Electric Motors – Test Method A**

Rated Output kW	Minimum Efficiency %			
	2 pole	4 pole	6 pole	8 pole
0.7	78.8	80.5	76.0	71.8
0.75	78.8	80.5	76.0	71.8
1.1	80.6	82.2	78.3	74.7
1.5	82.6	83.5	79.9	76.8
2.2	84.0	84.9	81.9	79.4
3	85.3	86.0	83.5	81.3
4	86.3	87.0	84.7	82.8
5.5	87.2	87.9	86.1	84.5
7.5	88.3	88.9	87.3	86.0
11	89.5	89.9	88.7	87.7
15	90.3	90.8	89.6	88.9
18.5	90.8	91.2	90.3	89.7
22	91.2	91.6	90.8	90.2
30	92.0	92.3	91.6	91.2
37	92.5	92.8	92.2	91.8
45	92.9	93.1	92.7	92.4
55	93.2	93.5	93.1	92.9
75	93.9	94.0	93.7	93.7
90	94.2	94.4	94.2	94.1
110	94.5	94.7	94.5	94.5
132	94.8	94.9	94.8	94.8
132	94.8	94.9	94.8	94.8
150	95.0	95.2	95.1	95.2
<185	95.0	95.2	95.1	95.2

NOTES:

1. For intermediate values of rated output, the efficiency shall be determined by linear interpolation.
2. Tolerances specified in table 1.1 of AS/NZS 1359.5 are applicable to the above values only in the case of a verification test.

MEPS2 TEST METHOD A - TABLE A3 = IE3**Tables A3 – Efficiency Levels for Three Phase Electric Motors – Test Method A**

Rated Output kW	Minimum Efficiency %			
	2 Pole	4 Pole	6 Pole	8 Pole
0.73	81.4	82.9	78.8	75.0
0.75	81.4	82.9	78.8	75.0
1.1	83.0	84.5	80.9	77.6
1.5	84.8	85.6	82.4	79.6
2.2	86.2	86.9	82.4	81.9
3	87.2	86.9	84.2	81.9
4	88.1	88.7	86.7	85.0
5.5	88.9	89.5	87.9	86.5
7.5	89.9	90.4	89.0	87.8
11	90.9	91.3	90.2	89.3
15	91.6	92.1	91.0	90.4
18.5	92.1	92.4	91.6	91.1
22	92.4	92.8	92.1	91.5
30	93.1	93.4	92.8	92.4
37	93.6	93.8	93.3	92.9
45	93.9	94.1	93.7	93.5
55	94.2	94.4	94.1	93.9
75	94.8	94.9	94.6	94.6
90	95.0	95.2	95.0	94.9
110	95.3	95.5	95.3	95.3
132	95.5	95.6	95.5	95.5
150	95.7	95.9	95.8	95.9
<185	95.9	95.9	95.8	95.9

NOTES:

1. For intermediate values of rated output, the efficiency shall be determined by linear interpolation.
2. Tolerances specified in Table 1.1 of AS/NZS 1359.5 are applicable to the above values only in the case of a verification test.

Table B1 – Efficiency Levels for Three Phase Electric Motors – Test Method B

Rated Output kW	Minimum Efficiency %			
	2 Pole	4 Pole	6 Pole	8 Pole
0.73	74.0	74.4	72.4	68.4
0.75	74.0	74.4	72.4	68.4
1.1	76.2	76.2	75.2	71.5
1.5	78.5	78.5	77.3	74.6
2.2	81.0	81.0	79.6	77.6
3	82.6	82.6	81.4	87.9
4.	84.2	84.2	83.0	81.5
5.5	85.7	85.7	84.6	83.3
7.5	87.0	87.0	86.0	85.0
1.1	88.4	88.4	87.6	86.8
15	89.4	89.4	88.8	88.2
18.5	90.0	90.0	89.6	89.0
22	90.5	90.5	90.1	89.7
30	91.4	91.4	91.1	90.8
37	92.0	92.0	91.7	91.5
45	92.5	92.5	92.3	92.0
55	93.0	93.0	92.8	92.6
75	93.6	93.6	93.5	93.4
90	94.1	93.9	93.9	93.7
110	94.4	94.4	94.3	94.1
132	94.8	94.7	94.7	94.4
150	95.0	95.0	94.9	94.7
<185	95.0	95.0	94.9	94.7
NOTES:				
1. For intermediate values of rated output, the efficiency shall be determined by linear interpolation.				
2. Tolerances specified in Table 1.1 of AS/NZS 1359.5 are applicable to the above values only in the case of a verification test.				

Table B2 – Efficiency Levels for Three Phase Electric Motors – Test Method B

Rated Output kW	Minimum efficiency %			
	2 Pole	4 Pole	6 Pole	8 Pole
0.73	80.5	82.2	77.7	73.5
0.75	80.5	82.2	77.7	73.5
1.1	82.2	83.8	79.7	76.3
1.5	84.1	85.0	81.5	78.4
2.2	85.6	86.4	83.4	80.9
3	86.7	87.4	84.9	82.7
4	87.6	88.3	86.1	84.2
5.5	88.5	89.2	87.4	85.8
7.5	89.5	90.1	88.5	87.2
11	90.6	91.0	89.8	88.8
15	91.3	91.8	90.7	90.0
18.5	91.8	92.2	91.3	90.7
22	92.2	92.6	91.8	91.2
30	92.9	93.2	92.5	92.1
37	93.3	93.6	93.0	92.7
45	93.7	93.9	93.5	93.2
55	94.0	94.2	93.9	93.7
75	94.6	94.7	94.4	94.4
90	94.8	95.0	94.8	94.7
110	95.1	95.3	95.1	95.1
132	95.4	95.5	95.4	95.4
150	95.5	95.7	95.6	95.7
<185	95.5	95.7	95.6	95.7

NOTES:

- For intermediate values of rated output, the efficiency shall be determined by linear interpolation.
- Tolerances specified in Table 1.1 of AS/NSZ 1359.5 are applicable to the above values only in the case of a verification test.

Table B3 – Efficiency Levels for Three Phase Electric Motors – Test Method B

Rated Output kW	Minimum Efficiency %			
	2 pole	4 Pole	6 Pole	8 Pole
0.73	82.9	84.5	80.4	76.5
0.75	82.9	84.5	80.4	76.5
1.1	84.5	85.9	82.4	79.1
1.5	86.2	87.0	83.8	81.0
2.2	87.5	88.8	85.5	83.3
3	88.5	89.1	86.9	84.9
4	89.3	89.9	87.9	86.2
5.5	90.1	90.7	89.1	87.7
7.5	90.9	91.5	90.1	88.9
11	91.9	92.2	91.2	90.3
15	92.5	92.9	92.0	91.4
18.5	92.9	93.3	92.5	92.0
22	93.3	93.6	92.9	92.4
30	93.9	94.2	93.6	93.2
37	94.2	94.5	94.0	93.7
45	94.6	94.8	94.4	94.2
55	94.9	95.5	94.8	94.6
75	95.4	95.5	95.2	95.2
90	95.5	95.7	95.5	95.5
110	95.8	96.0	95.8	95.8
132	96.1	96.1	96.1	96.1
150	96.1	96.3	96.2	96.3
<185	96.1	96.3	96.2	96.3

NOTES:

1. For intermediate values of rated output, the efficiency shall be determined by linear interpolation.
2. Tolerances specified in Table 1.1 of AS/NZS 1359.5 are applicable to the above values only in the case of a verification test.