มอเตอร์ชนิดกันระเบิดสำหรับงานน้ำมัน

Making you more competitive

ABB has been manufacturing motors for over 100 years. Our products are designed to be reliable, efficient and cost effective, and we can supply motors for practically any application. A full range of services is available through our worldwide service organization, with the latest eBusiness systems providing round-the-clock access, easy ordering and fast delivery.

M2000 motors

Our M2000 range offers quality motors, providing you with the ideal efficiency level for your needs. And our 24-hour availabiliy helps make your life easier. Through our extended support and services such as eBusiness solutions and an efficient global stock concept, we provide you with easy ordering and quick delivery.

The Leader in Motors

ABB is a global engineering and technology group serving customers in electrical power generation; transmission and distribution; automation; oil, gas and petrochemicals; industrial products and contracting; and financial services. The product range includes a full range of industrial electric motors, both AC and DC, LV and HV meeting the needs of most application, with virtually any power rating.

Within the Group, ABB Motors is the world's leading manufacturer of low-voltage induction motors, having over 100 years experience and a presence in more than 100 countries. ABB Motors's broad understanding of customer applications enables it to work closely to solve individual problems or to supply custom-designed motors for any project-no matter how demanding.

For customers, this all represents a solid value and commitment revealed in the dependable quality of ABB Motor's products and in its unrivalled customer service and back up. The hallmarks of its product are efficiency, robustness and reliability, combined to represent the best value available. Customers the world over rely on ABB Motors as the most solid and reliable supplier of electric motors. But above all, ABB Motors values its customers.

The best value is also enhanced by ABB Motors's worldwide customer service network guaranteeing fast delivery, rapid response and local back-up, as well as by worldwide ABB Service network supporting the after sales service.

ABB Motors has manufacturing facilities in Finland, Italy, Spain, Sweden, China and India. The comprehensive Motor stocks at each of these sites are reinforced by large and versatile stocks at Central Stock Nordic in Vasteras, Sweden; Central Stock, Europe in Menden, Germany and Central Stock Asia in Singapore, and by numerous distribution stocks.

Industrial

As a key element of its business strategy, ABB has committed to a broad program of product development and positioning under the Industrial^{IT} umbrella. This initiative is geared towards increasing integration of ABB products as the "building blocks" of larger solutions, while incorporating functionality that will allow multiple products to interact seamlessly as components of real-time automation and information systems.

Motors and generators represent one of the fundamental building blocks in the Industrial^{IT} architecture.

ABB (www.abb.com) is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impacts. The ABB Group of companies operates in around 100 countries and employs about 107,000 peoples.

ATEX Directives 94/9/EC ("95") and 1999/92/EC ("137")

ATEX Directives harmonize the safety rules in respect with the free trading principles of the European Community.

The responsibilities are split in two areas between the manufacturers and the end users. The manufacturers have to comply with the 'Essential Health and Safety Requirements' of the Products Directive 94/9/EC, or ATEX 95; and the end users must proceed to make an Explosion Protection Document based on risks assess-ment of their 'work places' and 'work equipment' to fulfi l the 'minimum requirements' listed in the Worker Protec-tion Directive 1999/92/EC or ATEX 137.

Motors comply fully with the ATEX product directive 94/9/EC.According to the requlations, low voltage motors for hazardous areas are exempted from the Low Voltage Directive, the EMC directive as well as the Machinery Directive.

IEC and the corresponding EN Standards are at the moment in a new process of renewal or revision. In general old and new standard or revision are both in parallel valid for about 3 years. This affects mostly the marking of the motor, occasionally also new technical requirements are introduced.

ABB refers to recently updated standards

In the implementation of ATEX 95 and ATEX 137 directives ABB refers to the IEC and EN standards which have been recently updated. Otherwise ABB refers to IEC standards.

Main standards for implementation Worker Protection Directive 1999/92/EC (ATEX 137)	
IEC/EN 60079-10	Classification of hazardous areas (gas areas)
IEC/EN 61241-10	Classification of areas where combustible dusts are or may be present
IEC/EN 60079-14	Installation rules of gas equipment
IEC/EN 61241-14	Selection and Installation of Ex tD (DIP) equipment.
IEC/EN 60079-17	Electrical installations Inspection and maintenance
IEC/EN 60079-19	Equipment Repair and overhaul

IECEx Scheme

The IECEx Scheme is an International Certifi cation Scheme covering both apparatus and services for explo-sive atmospheres, as the internationally accepted means of demonstrating claimed compliance with IEC standards. It comprises the following two international programs:

- IECEx Certifi ed Equipment Program, covering Ex products
- IECEx Certifi ed Service Facilities Program covering Ex Repair and Overhaul Workshops

It is a voluntary scheme which provide confi dence that products and services covered by an IECEx certifi cate meet the specifi ed requirements related to the hazard-ous area concerned (included Zone 2 / 22) as the inter-nationally accepted means of demonstrating claimed compliance with an IEC Standard.

The management of this Scheme include Certifi cation Bodies of 26 countries around the world (experts, manufacturers, end users, regulators).

For more information please visit www.iecex.com.

ABB is relying on the IECEx Scheme and a large range of Ex motors are tested and certifi ed according to this.

Main standards complying with the "EHSR's" of Products Directive 94/9/EC (ATEX 95)	
EN 60079-0	General requirements for gas
EN 61241-0	General requirements for dust
EN 60079-1	Flame proof enclosure 'd'
EN 60079-2	Pressurized enclosure 'p'
EN 60079-7	Equipment protection by increased safety 'e'
EN 60079-15	Construction test and marking of type of protection 'n'
EN 61241-1	Protection by enclosure 'tD'

Motors for EU motor efficiency levels

A new Europe-wide agreement will ensure that the efficiency levels of electric motors manufactured in Europe are clearly displayed. In contrast to the American legislation on motor efficiency the European agreement does not establishe mandatory efficiency levels. It basically establishes three classes giving motor manufacturers an incentive to qualify for a higher class.

ABB is one of only a handful of leading motor manufacturers in Europe, to have a motor range to meet or exceed the minimum efficiencies stated in the highest level of the EU agreement of LV motors.

These efficiency levels apply to 2-and-4-pole three phase squirrel cage induction motors rated for 400V, 50Hz with S1 duty class with the output 1.1 to 90kW, which account for the largest volume on the market.

The efficency of motor from different manufacturers are collated in a database.EURODEEM. published by the European Commission. It is accessible over the internet at http://jamest.jrc.it/projects/eem/eurodeem.htm.

EU efficiency classes for 2 pole motors.

Output KW	2-pole Boarderline EFF2/EFF3	EFF1/1FF2
1.1	76.2	82.8
1.5	78.5	84.1
2.2	81.0	85.6
3	82.6	86.7
4	84.2	87.6
5.5	85.7	88.6
7.5	87.0	89.5
11	88.4	90.5
15	89.4	91.3
18.5	90.0	91.8
22	90.5	92.2
30	91.4	92.9
37	92.0	93.3
45	92.5	93.7
55	93.0	94.0
75	93.6	94.6
90	93.9	95.0

EU efficiency classes for 4 pole motors.

Output KW	4-pole Boarderline EFF2/EFF3	EFF1/1FF2
1.1	76.2	83.8
1.5	78.5	85.0
2.2	81.0	86.4
3	82.6	87.4
4	84.2	88.3
5.5	85.7	89.2
7.5	87.0	90.1
11	88.4	91.0
15	89.4	91.8
18.5	90.0	92.2
22	90.5	92.6
30	91.4	93.2
37	92.0	93.6
45	92.5	93.9
55	93.0	94.2
75	93.6	94.7
90	93.9	95.0

Motors for other voltages

Motors wound for a given voltage at 50Hz can also be used for other voltages. Recalculation factors for current and torque given are beside; efficiency, power factor and speed remain approximately the same. Guaranteed values available on request.

ABB Motors reserve the right to change the design, technical specification and dimensions without prior notice.

Motor wound for	230V		400V		500V		690V	
Connected to 50Hz	220V	230V	380V	415V	500V	525V	660V	690V
% of values at 400V, 50Hz								
Output	100	100	100	100	100	100	100	100
I_N	182	174	105	98	80	75	61	58
I_S/I_N	90	100	90	106	100	119	90	100
T_S/T_N	90	100	90	106	100	119	90	100
I_{MAX}/T_N	90	100	90	106	100	119	90	100

Motors wound for certain voltage at 50 Hz can be operated at 60 Hz, without modification, subject to the following changes in their data.

Motor wound for 50Hz	220V	380V			
Connected to 60Hz	220V	380V	415V	440V	460V
Data at 60Hz in percentage of values at 50Hz					
Output	100	100	110	115	120
r/min	120	120	120	120	120
I_N	98	98	98	100	100
I_S/I_N	83	83	95	100	105
T_N	83	83	91	96	100
T_S/T_N	70	70	85	95	100
I_{MAX}/T_N	85	85	93	98	103

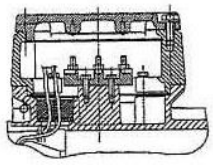
Bearings and terminal boxes

The motors are normally fitted with single-row deep groove ball bearings as listed in the table below. Degree of protection of the standard terminal box is IP55. The motors are supplied with 2 cable entries as standard according to the table below.

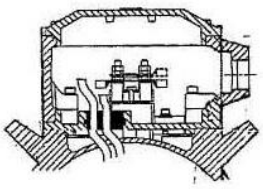
Terminal boxes are mounted on top of the motor. The terminal box of motor sizes 71 to 132 can be turned 4 x 90° and in motors sizes 160 to 355 rotated 2 x 180°.

		Standard bearing type				Cable entry	
Type	Poles	D-end		N-end		Main	Auxiliary*
80M	2,4,6	6202	DDUC3C3	6202	DDUC3C3	1-M25X1.5	2-M20X1.5
90S	2,4,6	6205	DDUC3C3	6205	DDUC3C3	1-M25X1.5	2-M20X1.5
90L	2,4,6	6205	DDUC3C3	6205	DDUC3C3	1-M25X1.5	2-M20X1.5
100L	2,4,6,8	6206	DDUC3C3	6206	DDUC3C3	1-M32X1.5	2-M20X1.5
112M	2,4,6,8	6207	DDUC3C3	6207	DDUC3C3	1-M32X1.5	2-M20X1.5
132S	2,4,6,8	6208	DDUC3C3	6208	DDUC3C3	1-M32X1.5	2-M20X1.5
132M	2,4,6,8	6208	DDUC3C3	6208	DDUC3C3	1-M32X1.5	2-M20X1.5
160M	2,4,6,8	6309	C3	6309	C3	2-M40X1.5	1-M20X1.5
160L	2,4,6,8	6309	C3	6309	C3	2-M40X1.5	1-M20X1.5
180M	2,4,6,8	6310	C3	6309	C3	2-M40X1.5	1-M20X1.5
180L	2,4,6,8	6310	C3	6309	C3	2-M40X1.5	1-M20X1.5
200L	2,4,6,8	6312	C3	6310	C3	2-M50X1.5	2-M20X1.5
225S	2,4,6,8	6313	C3	6312	C3	2-M50X1.5	2-M20X1.5
225M	2,4,6,8	6313	C3	6312	C3	2-M50X1.5	2-M20X1.5
250M	2,4,6,8	6315	C3	6313	C4	2-M63X1.5	2-M20X1.5
280S	2	6316	C4	6316	C3	2-M63X1.5	2-M20X1.5
280S	4,6,8	6316	C3	6316	C4	2-M63X1.5	2-M20X1.5
280M	2	6316	C4	6316	C3	2-M63X1.5	2-M20X1.5
280M	4,6,8	6316	C3	6316	C4	2-M63X1.5	2-M20X1.5
315S	2	6316	C4	6316	C3	2-M63X1.5	2-M20X1.5
315S	4,6,8	6319	C3	6316	C4	2-M63X1.5	2-M20X1.5
315M	2	6316	C4	6316	C3	2-M63X1.5	2-M20X1.5
315M	4,6,8	6319	C3	6316	C4	2-M63X1.5	2-M20X1.5
315L	2	6316	C4	6316	C3	2-M63X1.5	2-M20X1.5
315L	4,6,8	6319	C3	6316	C4	2-M63X1.5	2-M20X1.5
355M	2	6319M	C4	6319M	C3	2-M80X1.5	2-M20X1.5
355M	4,6,8	6322	C3	6319	C4	2-M80X1.5	2-M20X1.5
355L	2	6319M	C4	6319M	C3	2-M80X1.5	2-M20X1.5
355L	4,6,8	6322	C3	6319		2-M80X1.5	2-M20X1.5

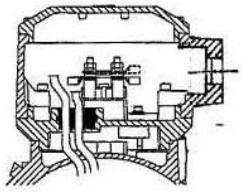
Motors of terminal boxes:



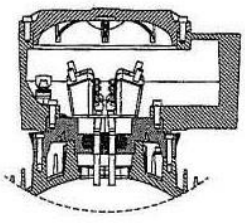
Terminal box for motors sizes 80 - 132



Terminal box for motors sizes 160 - 180



Terminal box for motors sizes 200 - 280



Terminal box for motors sizes 315 - 355