



Italia

CERTIFICATE

EU-TYPE EXAMINATION CERTIFICATE

[1]

[2]

**Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 2014/34/EU**

[3]

EU-Type Examination Certificate number:

TÜV IT 14 ATEX 060 X Rev.1

[4]

Equipment or Protective System: Three-phase asynchronous motor type AMD(T)500

[5]

Manufacturer: ABB S.p.A.

[6]

Address: Viale Dell'Industria, 18
I-20010 Vittuone (MI) * ITALY

[7]

This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8]

TÜV Italia, notified body no. 0948 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. R 14 EX 048

[9]

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 60079-0:2012+A11:2013; EN60079-1:2014;
EN60079-7:2015+A1:2018; EN60079-11:2012; EN60079-31:2014**

[10]

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11]

This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12]

The marking of the product shall include the following:



**I M2 Ex db I Mb
II 2G Ex db IIC (or IIB) T4...T3 Gb or
II 2G Ex db eb IIC (or IIB) T4...T3 Gb or
II 2G Ex db ib IIC (or IIB) T4...T3 Gb or
II 2G Ex db eb ib IIC (or IIB) T4...T3 Gb or
II 2D Ex tb IIIC T125°C...T150°C Db**

This certificate may only be reproduced in its entirety and without any change, schedule included.

Issue date:

20th September 2018



PRD N° 081B

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual
Recognition Agreements



**TÜV Italia S.r.l.
Notified Body N° 0948**

Alberto Carelli
Alberto Carelli

**Industry Service - Real Estate & Infrastructure
Managing Director**

TÜV Italia has been authorized by Italian government to operate as notified body for the certification of equipment or protective system intended for use in potentially explosive atmospheres. This document is not valid without official signature and logo. The internal reference code is 722135568.

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Certificate History

Revision:	Description:	Report no:	Issue Date:
-	First issue	-	22/10/2014
1	Directive and standards updated; Dust protection and mining service included; IP degree updated; Ex separately certified components and equipment list updated;	1	20/09/2018

[15] Description of equipment

The 3-phase induction motors AMD (T) series, have shaft height 500 mm, with a bundle of tubes around the frame for air-air cooling (IC511).
If technically required, the cooling air can be forced within the tubes by means of a separated motor-fan (IC516).
The motors are designed and manufactured in accordance with the protection modes Ex db or Ex db eb (protection type Ex db eb, when Ex eb certified main terminal boxes are mounted), for gas groups IIB or IIC and with temperature classes T4 or T3, mechanical protection degree IP55, IP65 or IP66.
The motors are available in the configurations 2 or more poles.
The main features of the motors are: closed type machine, frame including the bundle of cooling tubes, self-ventilation or with forced ventilation.
The motors are made with separate compartments for motor, for supply and/or star point terminal box and for the auxiliary terminal box.
The motors can be equipped with auxiliary devices (motor space heaters, thermal detectors, vibration sensors, etc.).
The mounting arrangements can be IM1001 (horizontal axis, frame with feet and 1 shaft end), IM1002 (horizontal axis, frame with feet and 2 shaft ends) or IM4011 (vertical axis with shaft end on the lower side).

If requested, stator winding RTDs Ex-i certified as “Ex component” are mounted, the motor marking becomes as follow:

- II 2G Ex db ib IIC (or IIB) T4...T3 Gb
- II 2G Ex db eb ib IIC (or IIB) T4...T3 Gb

The RTD element shall be connected with intrinsically safe system according to EN60079-25 by “ia” or “ib” intrinsically safe device according to EN60079-11.

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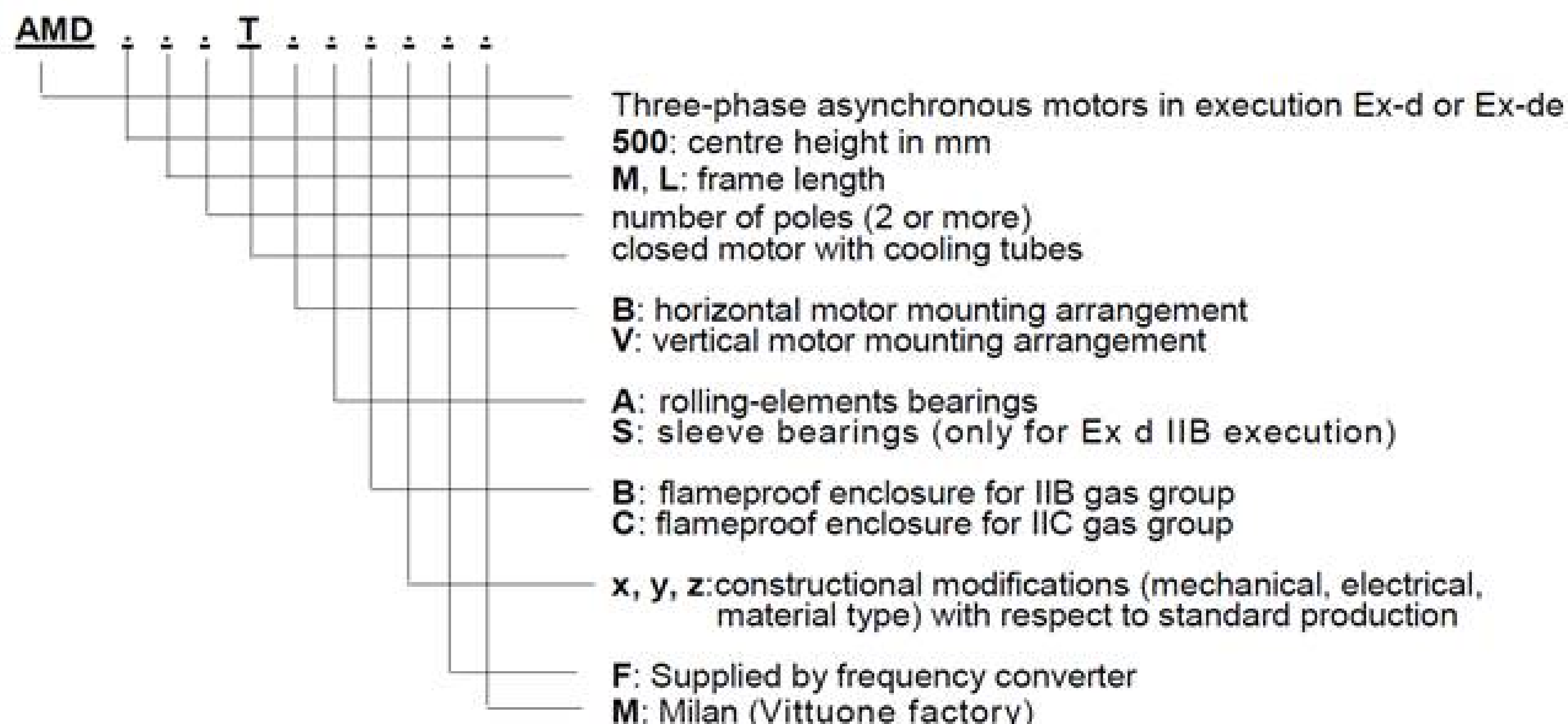
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Type code:



Rated characteristics

- Maximum power: 1300 kW

The rated power of the various types of motors as a function of poles number, rated voltage, duty type, temperature class, ambient temperature and type of supply with all the other electrical characteristics and tolerance prescribed by EN/IEC 60034-0, are defined by ABB in conformity with characteristics limit here indicated.

The maximum current must be compatible with the values permitted by insulators bushings and/or line connections used.

- Maximum rated voltage: 11 kV for Ex db eb motors / 13.8 kV for Ex d motors

Supply voltage up to 13.8 kV is available using the Ex d IIB terminal box "segregated phases" type.

- Rated frequency: 50/60 Hz
- Number of poles: 2 or more
- Duty: S1/S10

The motors with S2 duty can have a maximum power greater than the above limit according with the following multiplying factor kW (a):

Power level for 60 min $a \leq 1.15$

Power level for 20 min $a \leq 1.4$

- Max. rotational speed: 3600 r.p.m.
- Insulation Class: F (thermal class B or F)
- Ambient temperature: -55°C to +60°C or -40°C to +60°C or -20°C to +60°C

The motor can be designed in three different versions regarding the ingress protection level:

- IP55 (motor with sleeve bearing. IP testing at IPX5 comply with IEC 60034-5 and IEC 60079-0)
- IP65 (motor with antifriction bearing. IP testing at IPX6 comply with IEC 60034-5 and IEC 60079-0))
- IP66 (motor with antifriction bearing. IP testing at IPX6 comply with IEC 60034-5.

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Terminal boxes satisfy IP66 according with their component certificates.

Supply by frequency converter

- Max. rated voltage for Ex d motor : 11.0 kV rms
- Max. rated voltage for Ex db eb motor : 9.0 kV rms; 14 kV peak
- Max. rotational speed : 3600 r.p.m.
- Tamb = -20°C to +60°C or Tamb = -40°C to +60°C or Tamb = -55°C to +60°C

Note 1: Maximum ambient temperature can be reduced to temperature less than +60 °C (as example Tamb = -20°C to +40°C)

The motors designed for operation with frequency converter are equipped with temperature detectors place inside the stator winding. The operation of the thermal detector shall guarantee the disconnection of the supply; the resetting of the supply shall not be automatic. When forced ventilation by auxiliary motor is used, the operation of the primary motor shall be interlocked to the correct operation of the forced ventilation.

The temperature measuring devices have the following settings:

Stator winding with insulation class F and temperature limit of class B (T4):

- 125°C Alarm / 130°C Trip

Stator winding with insulation class F (T3):

- 145°C Alarm / 150°C Trip

Bearing:

- 90°C Alarm / 100°C Trip

The resetting of the power supply shall not be automatic.

Warning label

"Restore silicone grease at every opening"

"Use screws quality 8.8 ISO R 898 / I-II " or

"Use screws ASTM A320 L7"

In case of use of anti condensate heaters:

"Attention: energized resistors"

In case the equipment should be suitable for installation in areas with potential presence of IIC gas a suitable label will report:

"Warning: potential electrostatic charging hazard – see manual"

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Routine tests

Minimum ambient temperature to -55°C: the overpressure test on the motor enclosure shall be carried out at 36 bar for gas group IIC and 31 bar for gas group IIB with static method (EN60079-1 standard).

Minimum ambient temperature to -40°C: the overpressure test on the motor enclosure shall be carried out at 33 bar for gas group IIC and 29 bar for gas group IIB with static method (EN60079-1 standard).

Minimum ambient temperature to -20°C the overpressure test on the motor enclosure shall be carried out at 20 bar for gas group IIC and 15 bar for gas group IIB with static method (EN60079-1 standard).

Mining service: values of static overpressure for gas group IIB shall be applied.

The overpressure test on the Ex d mains and auxiliary terminal boxes shall be carried out at the pressure value reported in the relevant certificates.

Motor with Ex eb terminal box: dielectric strenght test according to EN60079-7 shall be performed at $(2U_n+1000)V$ for at least 60 seconds or $1.2x(2U_n+1000)V$ for at least 100 ms. (U_n = rated voltage of the motor).

[17] Special conditions for safe use

When Ex-i thermal detectors in the stator windings are used, they (RTDs) must be connected to an appropriate intrinsically safe system. They must be tested at 500V to ground and must be grounded whenever dielectric testing of the machine takes place.

When CT are fitted, for the neutral terminal arrangement the following applies: adequate precautions shall be taken to ensure that the CT secondaries have a load connected at all time.

When space heaters are fitted, they have to be interlocked such that they can only be energized when the motor is de energized.

The flame paths are specified in the manufacturer drawings. For information regarding the dimension of the flameproof joints the manufacturer shall be contacted.

In order to minimize the risk of hazards caused by electrostatic charges, clean the motor only with a wet rag or by non-frictional means.

The bearing automatic lubricators shall be started at the same time with the same settings.

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[18] Essential Health and Safety Requirements

Assured by compliance with the standards set out in the [9].

[19] Drawings and Documents

Listed documents (prot. 240983 + 722135568)

Title:	Description:	Pages:	Rev:	Date:
190/ATEX-IECE _x /2014	Technical Note	32	00	03/09/2014
204/ATEX/2016	Technical Note (Certification amendment)	20	B	05/06/2018
016-ATEX-IEC-AMD MOTORS	Safety Instruction Manual	20	F	15/09/2017
ABB/186 – 14 ATEX060X	Declaration of conformity	01	A	25/10/2016
M519026	General assembly (Antifriction bearings)	02	n.a.	27/05/2014
M519028	Details Antifriction bearings assembly	02	n.a.	27/05/2014
M519029	General assembly (Sleeve bearings)	01	n.a.	27/05/2014
M510879	Details Sleeve bearings assembly	02	n.a.	12/07/2010
M519032	MTB coupling with motor frame (IIB Group) and (IIC Group)	02	n.a.	27/05/2014
M519030	Coupling Aux. terminal box with motor frame	01	n.a.	27/05/2014
M500475	Electric motor fan assembly	02	A	28/01/2010
M500486	Assembly temperature controls in the bearings	01	A	28/01/2010
M500430	Plate with instruction for grease replacement	01	A	28/09/2009
M500428	Grounding terminals	03	B	28/09/2009
M514239	Intermediate enclosure coupling with motor frame	02	B	21/10/2015
3GZF500728-34	Shaft sealing	01	B	11/12/2001
3AFP9168732-001	Protection cup	01	A	12/03/2018
3AFP9178396-001	Fan Cover Protection for Mining application	01	A	22/06/2018
M502532	Fan Cover Protection for not-mining application	01	A	22/06/2018
n.a.	Stator winding Ex-i RTDs description	07	00	22/03/2012

One copy of all documents is kept in TÜV Italia files.