



Motors and drives for applications in explosive atmospheres

Certification. Diligence. Reliability. Safety. Everything counts

Operating processes in explosive (Ex) atmospheres requires the right mix of motors, drives and adherence to the standards. Everything counts when it comes to understanding what's needed and how to meet the requirements. That's where ABB can help you. Our extensive experience working with explosive atmospheres along with our comprehensive motor and drive testing ensures we can help you optimize and select the right drives and motors to meet your particular Ex requirements.

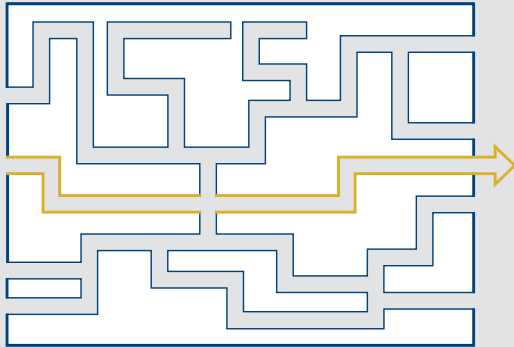
Drives for motors in explosive atmospheres

- Tested together with Ex motors
- Certified built-in protection functions
- Wide range of options
- Easy to program
- Scalable control performance, from basic to the most demanding applications

Motors in explosive atmospheres

- Certified to national and international standards
- Efficiency classes IE2 and IE3
- Flexible design for any application
- Designed for operation with variable speed drives





Correct dimensioning is important

We help you to size motors and drives to your exact needs.

Correctly sized motors and drives **reduce motor frame heating and sparking** from bearing currents.

They also help you to **reduce your energy use.**

We can provide the certification

We have our own test center where we can test and certify motors and drives together.

Our low voltage motors for explosive atmospheres and **low voltage industrial drives** have been **tested to verify** that when correctly dimensioned, they are always **safe to use in explosive atmospheres.**



Global service network

Our **global network of certified service providers** are trained and experienced to work with Ex certified motors and drives.

Our service ensures that your **ABB Declaration of Conformity is retained.**

Motor selection table

Ex motor	Motor type	Gas/dust group	Temp. class	Equipment protection level (EPL)	Motor power	Motor frame size	Efficiency class	IP class ¹⁾
Flameproof Ex d	M3JP	IIB or IIC	T4	Gb	0.55 to 710 kW	IEC 80 to 450	IE2	IP55
Flameproof Ex de	M3KP	IIB or IIC	T4	Gb	0.55 to 950 kW	IEC 80 to 450	IE2	IP55
Non-sparking Ex nA	M3GP cast iron	IIC	T3	Gc	0.25 to 1000 kW	IEC 71 to 450	IE2, IE3	IP55
Non-sparking Ex nA	M3AA aluminum	IIC	T3	Gc	1.1 to 85 kW	IEC 90 to 280	IE2, IE3	IP55
Increased safety Ex e	M3HP	IIC	T3	Gb	0.25 to 390 kW	IEC 80 to 400	IE2	IP55
Dust ignition protection Ex tb	M3GP cast iron	IIIB or IIIC	T125/150 °C ²⁾	Db	0.25 to 680 kW	IEC 71 to 400	IE2, IE3	IP65
Dust ignition protection Ex tc	M3GP cast iron	IIIB or IIIC	T125/150 °C ²⁾	Dc	0.25 to 680 kW	IEC 71 to 400	IE2, IE3	IP55/65
Dust ignition protection Ex tc	M3AA aluminum	IIIB or IIIC	T125 °C	Dc	1.1 to 85 kW	IEC 71 to 280	IE2, IE3	IP55/65

Larger motors for explosive atmospheres for VSD duty on request.

¹⁾ Higher IP class on request

²⁾ Temperature class T150 °C when surface temperature protection with PTC is used.

Drive selection table

Drive family	Type and construction	Supply voltage	Power range	ATEX certified STO	ATEX certified protective functions
ACS880	-01	208 to 690 V	0.75 to 250 kW	+ Q971	-
	-04	380 to 690 V	250 to 2200 kW	+ Q971	-
	-multidrive modules	380 to 690 V	1.5 to 3200 kW	+ Q971	-
ACS880	-07 -multidives	380 to 690 V 380 to 690 V	55 to 2800 kW 1.5 to 5600 kW	See next column	+L513/L514 + Q971 +L513/L514 + Q971
ACS800	-01	208 to 690 V	1.1 to 160kW	-	-
	-11	208 to 690 V	7.5 to 110 kW	-	-
	-31	208 to 690 V	7.5 to 110 kW	-	-
	-02	208 to 690 V	55 to 560 kW	-	-
	-04	230 to 690 V	1.1 to 1900 kW	-	-
	-04LC	380 to 690 V	315 to 2240 kW	-	-
	-14	380 to 690 V	110 to 1700 kW	-	-
	-multidrive modules	380 to 690 V	90 to 2240 kW	-	-
	-multidrive modules LC	380 to 690 V	1.5 to 2800 kW	-	-
ACS800	-07	380 to 690 V	75 to 2800 kW	See next column	+L513/L514 + Q971
	-07LC	380 to 690 V	315 to 5600 kW		+L513/L514 + Q971
	-17	380 to 690 V	55 to 2500 kW		+L513/L514 + Q971
	-17LC	380 to 690 V	90 to 5200 kW		+L513/L514 + Q971
	-37	380 to 690 V	55 to 2700 kW		+L513/L514 + Q971
	-37LC	380 to 690 V	90 to 5200 kW		+L513/L514 + Q971
	-multidives	380 to 690 V	1.1 to 5600 kW		+L513/L514 + Q971
	-multidives LC	380 to 690 V	1.1 to 5600 kW		+L513/L514 + Q971
	ACS550	-01 -02	208 to 480 V 380 to 480 V	0.75 to 160 kW 200 to 355 kW	-

Protective functions	Motor certification – EC Declaration of Conformity
Winding equipped as a standard with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended. PTC sensors for surface temperature control for new low voltage motors is available as a standard option.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550. For other VSDs protection with thermistors limiting surface temperature of the motor (option +813).
Winding equipped as a standard with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended. PTC sensors for surface temperature control for new low voltage motors is available as a standard option.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550. For other VSDs protection with thermistors limiting surface temperature of the motor (option +813).
Winding equipped as a standard with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550.
Winding equipped as a standard in size 160 and above with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550.
–	As standards require Ex e motors to be tested together with the specific drive, are Ex d/Ex de motors usually offered instead of practical reasons.
Winding equipped as a standard with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550. For other VSDs protection with thermistors limiting surface temperature of the motor (option +813).
Winding equipped as a standard with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550. For other VSDs protection with thermistors limiting surface temperature of the motor (option +813).
Winding equipped as a standard in size 160 and above with temperature sensor to protect the insulation. Connecting sensor to VSD through safety circuit is recommended.	Type tested with ACS880 with DTC, ACS800 with DTC and ACS550. For other VSDs protection with thermistors limiting surface temperature of the motor (option +813).

Recommendations
Customer can build safety circuit with motor temperature sensor, and ATEX compliant protection relay, which can disconnect the motor from the supply if needed. See: ATEX-certified Safe disconnection function for ACS880 drives (3AUA0000132231).
Customer can connect the motor temperature sensors to protective function (PTC/Pt100) of the drive as described in application guide. See: ACS880 cabinet-installed drives ATEX-certified Safe disconnection function Application guide (3AXD50000014979).
Customer can build the safety circuit by connecting the motor temperature sensors to a certified PTC/PT100 relay which controls the main contactor of the drive.
Customer can connect the motor temperature sensors to protective function (PTC/ PT100) of the drive as described in application guide. See ACS800 ATEX instructions for cabinet-installed drives: 3AUA0000082378.
Customer can build the safety circuit by connecting the motor temperature sensors to a certified PTC/PT100 relay which controls the main contactor of the drive.

When you use a motor and drive from ABB, you don't need additional certification and motor temperature protections. We have tested and certified our motors for explosive atmospheres with our industrial drives (in direct torque mode) and general purpose drives (in scalar mode).



As always with safety, everything counts. Therefore we always recommend using additional motor temperature protection whenever possible.

Contact us

For more information contact your local ABB representative or visit:

www.abb.com/drives

www.abb.com/motors&generators

www.abb.com/plc

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3AUA0000158367 REV A EN 23.9.2014 #17215