IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx EUT 19.0016X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2020-05-22		
Applicant:	**ORANGE1 ELECTRIC MOTORS S.p.A.** Via Mantova, 93 43122 Parma **Italy**		
Equipment:	**Electric motor, Series J2-K2**		
Optional accessory:	Capacitor box		
Type of Protection:	**Equipment dust ignition protection by enclosure "t", Increased safety "e", Flameproof enclosures "d" (for capacitor box);**		
Marking:	For three-pase motor (Size 56 and Size 63) Ex eb IIC T4 Gb -40°C ≤ Tamb ≤ +40°C ,or Ex eb IIC T4 Gb Ex tb IIIC T125°C Db -40°C ≤ Tamb ≤ +40°C or , for three-pase motor (other sizes) Ex eb IIC T3 Gb -40°C ≤ Tamb ≤ +45°C , or Ex eb IIC T3 Gb Ex tb IIIC T125°C Db -40°C ≤ Tamb ≤ +45°C or , for Single-phase motor Ex db eb IIC T3 Gb Ex tb IIIC T125°C Db -40°C ≤ Tamb ≤ +45°C		

Approved for issue on behalf of the IECEx Certification Body: **Bucchieri Dionisio**

Position: **Head of IECEx CB**

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
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Certificate issued by:

Eurofins Product Testing Italy S.r.l.
Via Cuorgnè
n.21 - 10156 Torino
Italy

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Date of issue: 2020-05-22 Issue No: 0

Manufacturer: **ORANGE1 ELECTRIC MOTORS S.p.A.**
Via Mantova, 93
43122 Parma
Italy

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
Edition:5.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

IT/EUT/ExTR19.0010/00

Quality Assessment Report:

IT/EUT/QAR14.0001/07

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The equipment are made of aluminum with separate parts: motor enclosure, terminal box for supply and a capacitor enclosure (for single phase motors).
The motors are suitable for Group IIC and Group IIIC.
The motor enclosure and the terminal box have types of protection “Ex eb” and “Ex tb”;
The capacitor enclosure has types of protection “Ex db” and “Ex tb”;
The motors can be equipped with auxiliary devices (capacitor, breathing and draining devices).
The equipment are provided with PTC thermal protectors in the stator windings (one on each phase).
Cable entries
Cable glands are already properly IECEx certified.
The accessories used for cable entries are not object of this certification and must be subjected of a separate IECEx certification according to IEC 60079-31 and IEC 60079-0. They must have an operating temperature range from -40°C and +80°C and ensure a degree of protection IP 65.

SPECIFIC CONDITIONS OF USE: YES as shown below:
- The operating temperature of supply cable must be suitable for a temperature of 80°C.
- The uses has to periodically clean the enclosure in order to avoid the creation of a dust layer.

In addition, for single-phase motors:
- The supply voltage must be within ±5% of the nominal value
- Flameproof joints are not intended to be repaired

In addition, for motor for sizes from 71 to 160 with increased safety type of protection:
- The user has to connect the equipment to a current-dependent safety device which, in case of locked rotor, de-energize within the limit time te.
-The intervention curve of the protection device, for the automatic de-energizing of supply, must coherent with the value Ia/In and the time te shown on the marking plate.
- It is forbidden the self-restart of the equipment after the intervention of the protection.

In addition, for motor sizes 56 and 63 with increased safety type of protection:
- The user has to follow what is indicated for motor sizes from 71 to 160; or
- Only for T3 temperature class, the user has to connect the terminals of each PTC sensor to a relay type MS220KA manufactured by ZIEHL (one for each PTC) which, in case of locked rotor, de-energize the motor to avoid that the surface temperature reach the ignition value; Activation temperature of the relay is 150 °C.
- It is forbidden the self-restart of the equipment after the intervention of the relay.
-The relay has to be placed in safe zone or in an appropriate certified enclosure.

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Equipment (continued):

Electrical characteristics:

Mains Supply

Maximum supply voltage:	600 Vac 3-phase
Rated frequency:	50 Hz or 60 Hz
Rated power:	0.06 kW to 18.5 kW
Poles:	2, 4, 6, 8
Insulation class:	F (155°C)
Duty:	S1
Degree of protection:	IP 65 (according to EN 60079-0 and IEC 60529)
Ambient temperature:	from -40 °C to +40 °C (or +45°C for T3 temperature class)
Painting:	Maximum thickness of 0.2 mm for type of protection “Ex eb” Not performed for type of protection “Ex tb”

Temperature classes and Maximum surface temperature:

T4, T3, T 125°C as a function of the ambient temperature and of the electrical characteristics (as indicated in the technical note).

Ventilation

Ventilation is made by fan, who is fitted directly on the shaft.

Fans for “Ex eb” motors, which have a peripheral speed below 50 m/s, are made of plastic material.

Fans for “Ex tb” or “Ex eb” motors (which have a peripheral speed above 50 m/s) are made of plastic dissipative material or aluminum.

The degree of protection (IP) of ventilation openings are:

- IP 20 on the air inlet side
- IP 10 on the air outlet side

Warning label

“Do not open when energized”

“Single phase cap. conduit thread size: M20x1.5 (or M16x1.5 or ½”NPT or ¾” NPT)”

Routine tests:

In compliance with clause 7.1 of IEC 60079-7, the manufacturer has to perform the dielectric strength test between galvanically isolated parts with a minimum voltage of (2*U+1000) V r.m.s. for 60 s, where “U” is the working voltage. As an alternative, the test can also be conducted at (2*U+1000)x1.2 V r.m.s. for t>0.1s.

Annex:

Annex to CoC_1.pdf

Identification

The three-phase and single-phase electric motors are identified by a code as follows:

J2 063 A 4 H 230 5 F Z 3

Motor type	
K2	Single-phase category 2
J2	Three-phase category 2

Motor shaft height
56, **63**, **71**, **80**, **90**, **100**, **112**, **132**, **160**

Stator dimensions	
A, B	56, 63, 71, 80
S, L	90
K, M	100
M	112
S, K, M, L	132
S, M, L	160

Poles	
2, 4	Single-phase motors
2, 4, 6 , 8	Three-phase motors 1 speed
3, 5	Three-phase motors 2 speeds 2/4 and 4/8 poles

Mounting arrangements			
H	B3	**W**	B3/B14
B	B3 right box	**X**	B3/B5
S	B3 left box	**J**	B3/B14 left box
F	B5	**M**	B3/B14 right box
G	V1 (B5 + rain cover)	**R**	B3/B5 left box
Q	B14	**T**	B3/B5 right box

Supply voltage	
Three-phase 1 speed	
230	For 230/400V Motors
400	For 400/690V Motors
Three-phase 2 speeds	
230 oder **400**	-
Single-phase	
230	-

Frequency	
5	50Hz
6	60Hz

Protection (IP and Ex)	
F	IP55 – Increased safety ‘Ex eb’
G	IP65 - Protection Ex tb IIIC (Conductive dust)
H	Increased safety ‘Ex eb’ IP65 - Protection Ex tb IIIC

Painting			
Z	Not painted	**M**	BRIGHT BLACK RAL9005
B	BLUE RAL5010	**N**	OPAQUE BLACK
E	BLUE RAL5014	**V**	GREEN 5018
K	BLUE RAL5015	**W**	WHITE RAL9001
G	GREY RAL7031		

Thermal protectors	
-	Without thermal protectors
P	Thermistor PTC – Temperature Class T3
U	Thermistor PTC – Temperature Class T4

Annex to certificate: **IECEx EUT 19.0016X Issue N. 0 of 2020-05-22**

The list of time tE is reported below:

Three phase motors - 400V 50Hz - 2 poles

			Class T3		Class T4
			T_a 40°C	T_a 45°C	T_a 40°C
Type	Poles	Power [kW]	t_E [s]	t_E [s]	t_E [s]
J2 56A2	2	0.09	13	13	13
J2 56B2	2	0.12	14	14	14
J2 63A2	2	0.18	8	8	8
J2 63B2	2	0.25	16	16	16
J2 71A2	2	0.37	13	13	-
J2 71B2	2	0.55	9	9	-
J2 80A2	2	0.75	6	6	-
J2 80B2	2	1.1	12	12	-
J2 90S2	2	1.5	13	13	-
J2 90L2	2	2.2	11	11	-
J2 100L2	2	3	15	15	-
J2 112M2	2	4	6	6	-
J2 132K2	2	5.5	10	10	-
J2 132S2	2	7.5	5	5	-
J2 160K2	2	11	6	6	-
J2 160M2	2	15	7	7	-
J2 160L2	2	18.5	9	9	-

Three phase motors - 400V 50Hz - 4 poles

			Class T3		Class T4
			T_a 40°C	T_a 45°C	T_a 40°C
Type	Poles	Power [kW]	t_E [s]	t_E [s]	t_E [s]
J2 56A4	4	0.06	17	17	17
J2 56B4	4	0.09	19	19	19
J2 63A4	4	0.12	28	28	28
J2 63B4	4	0.18	19	19	19
J2 71A4	4	0.25	17	17	-
J2 71B4	4	0.37	12	12	-
J2 80A4	4	0.55	11	11	-
J2 80B4	4	0.75	17	17	-
J2 90S4	4	1.1	16	16	-
J2 90L4	4	1.5	11	11	-
J2 100K4	4	2.2	7	7	-
J2 100L4	4	3	12	12	-
J2 112M4	4	4	5.5	5.5	-
J2 132S4	4	5.5	9	9	-
J2 132M4	4	7.5	7	7	-
J2 160M4	4	11	7	7	-
J2 160L4	4	15	8	8	-

Three phase motors - 400V 50Hz - 6 poles

				Class T3	
				T_a 40°C	T_a 45°C
Type		Poles	Power [kW]	t_E [s]	t_E [s]
J2	71A6	6	0.18	21	21
J2	71B6	6	0.25	19	19
J2	80A6	6	0.37	14	14
J2	80B6	6	0.55	14	14
J2	90S6	6	0.75	16	16
J2	90L6	6	1.10	16	16
J2	100L6	6	1.50	12	12
J2	112M6	6	2.20	15	15
J2	132S6	6	3.00	7.5	7.5
J2	132K6	6	4.00	7	7
J2	132M6	6	5.50	8	8
J2	160M6	6	7.50	7.5	7.5
J2	160L6	6	11.00	7	7

Three phase motors - 400V 50Hz - 8 poles

				Class T3	
				T_a 40°C	T_a 45°C
Type		Poles	Power [kW]	t_E [s]	t_E [s]
J2	80A8	8	0.18	28	28
J2	80B8	8	0.25	21	21
J2	90S8	8	0.37	23	23
J2	90L8	8	0.55	20	20
J2	100K8	8	0.75	14	14
J2	100L8	8	1.10	14	14
J2	112M8	8	1.50	17	17
J2	132S8	8	2.20	18	18
J2	132L8	8	3.00	12	12
J2	160S8	8	4.00	12	12
J2	160M8	8	5.50	12	12
J2	160L8	8	7.50	11	11

Single phase motors - 230V 50Hz - 2 poles

Type		Poles	Power [kW]	Class T3	
				t_E time[s]	t_E time[s]
				40°C	45°C
K2	56A2	2	0.09	32.0	32.0
K2	56B2	2	0.12	32.0	32.0
K2	63A2	2	0.18	18.2	18.2
K2	63B2	2	0.25	26.0	26.0
K2	71A2	2	0.37	14.7	14.7
K2	71B2	2	0.55	23.3	23.3
K2	80A2	2	0.75	13.0	13.0
K2	80B2	2	1.1	10.9	10.9
K2	90S2	2	1.5	27.8	27.8
K2	100L2	2	2.2	30.0	30.0
K2	100L2	2	3	28.4	28.4

Single phase motors - 230V 50Hz - 4 poles

Type		Poles	Power [kW]	Class T3	
				t_E time[s]	t_E time[s]
				40°C	45°C
K2	56A4	4	0.06	32.0	32.0
K2	56B4	4	0.09	32.0	32.0
K2	63A4	4	0.12	32.0	32.0
K2	63B4	4	0.18	32.0	32.0
K2	71A4	4	0.25	24.2	24.2
K2	71B4	4	0.37	21.7	21.7
K2	80A4	4	0.55	15.5	15.5
K2	80B4	4	0.75	24.9	24.9
K2	90S4	4	1.1	19.4	19.4
K2	90L4	4	1.5	14.7	14.7
K2	90L4	4	1.5	17.5	17.5
K2	100K4	4	2.2	32.0	32.0
K2	112M4	4	3	13.1	13.1

Routine tests:

In compliance with clause 7.1 of IEC 60079-7, the manufacturer has to perform the dielectric strength test between galvanically isolated parts with a minimum voltage of (2*U+1000) V r.m.s. for 60 s, where “U” is the working voltage. As an alternative, the test can also be conducted at (2*U+1000)x1.2 V r.m.s. for t>0.1s.