CESI

CERTIFICATE

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Schema di certificazione CESI-ATEX

[1] SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE

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

[3] Supplementary EU-Type Examination Certificate number:

CESI 01 ATEX 027 X/10

[4] Product: **Command, control and signalling units EJB.. series (and AQS-1 model)**

[5] Manufacturer: **COR.TEM S.p.A.**

[6] Address: Via Aquileia, 10 – 34070 Villesse (GO) – Italy.

[7] This supplementary certificate extends EC–Type Examination Certificate CESI 01 ATEX 027 to apply to products designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to..

[8] CESI, notified body n. 0722 in accordance with Article 17 of the Directive 2014/34/EU of the Parliament and Council of 26 February 2014, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-B6027363.

[9] In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016

[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, examination and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

Ex	**I M2**	**Ex db I Mb** *(Stainless Steel enclosures only)*
Ex	**II 2 GD**	**Ex db IIB T6, T5, T4 Gb** *or* **Ex db IIB+H_2 T6, T5, T4 Gb** **Ex tb IIIC T85°C, T100°C, T135° Db** **IP66** *or* **IP66/67** *(IP66 with operators)*

Date 2016.10.28 - Translation issued the 2016.10.28

Prepared	**Verified**	**Approved**
Alessandro Fedato	Mirko Balaz	Roberto Piccin

CESI S.p.A.
Testing & Certification Division
Business Area Certification
Il Responsabile
(Roberto Piccin)

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 01 ATEX 027 X/10**

[15] **Description of the variation to the product**

- Updating to standards EN 60079-0: 2012 + A11:2013, EN60079-1:2014 and EN60079-31:2014.
- New minimum ambient temperature -60°C.
- New enclosures type EJBX-01 and EJBT... series have been added.
- Special conditions for safe use (X) added.

Description of equipment

The **EJB-..** Command, control and signalling unit series are equipments composed by an Ex db flameproof enclosure used to install common electrical devices such as contactors, switches, measuring instruments, programmable logic controllers. Pilot lights, contact blocks, command and signalling actuators can be mounted on the cover or on the enclosure walls, while circular or rectangular transparent glass windows can be sealed on the cover to permit the inner instrument reading, etc.

The **EJB-..** command, control and signalling unit series have the body and the cover made in aluminium alloy or stainless steel and are in Ex db I (stainless steel only), Ex db IIB, Ex db IIB+H_2 and Ex tb IIIC execution.

The **EJB-..** series is available in two particular execution:

- With external flange for type **EJB-..** ;
- With internal flange for type **AQS-1**.

Gaskets between enclosures cover and body flanged joint and for all other accessories are made in silicon and they guarantee the protection degree IP66 while IP67 for enclosures without operators only.

The flanged joint between the body of **EJB-..** Command, control and signalling unit series and the covers are fixed with quality A2-70 stainless steel screws.

The walls of the enclosures can be drilled and threaded with maximum size and maximum number of hubs as specified in the manufacturer documents annexed. Each enclosure is provided with internal and external earthing screw or bolt and a bottom plate for electrical devices mounting.

Electrical characteristics

Rated voltage:	12 ÷ 250	VDC
	24 ÷ 1000	VAC
Nominal frequency:	50/60	Hz
Max. rated current:	650	A
Maximum power for lamps:	3W with $T_{amb.}$ +55°C	

Ex db flameproof enclosure EJB-45, EJB-5, EJB-5B, EJB-55B sizes restrictions:

Max. rated voltage:	750	VDC
Max. rated current:	630	A

Ex db flameproof enclosure EJB-55, EJB-6, EJB-6B, EJB-7, EJB-7B sizes restrictions:

Max. rated voltage:	690	VAC
Nominal frequency:	50/60	Hz
Max. rated current:	1000	A

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Table of typical electrical and electronic equipments inside the boxes:

DESCRIPTION	[V]	DISSIPATED POWER (W)	[A]
Analogical / digital instruments	660	10	5
Electronic gear case	400	10	-
PLC, multiplexer, amplifier	240	80	-
Control and gauging device	240	100	-
Automatic breakers	660	-	650
Fuses	660	-	400
Air thermal relays	500	12	10
Electronic control device	660	100	-
Air contactors	660	30	650
Sequence timer	240	5	10
Photoelectrical cell	240	2	-
Capacitors (discharge time 30sec.)	660	-	-
Transformers	660	200	-
Resistors	240	300	-
Terminals	660	-	-
Ballasts	277	40	7.5

The ratings above specified are maximum values admitted; actual values will be subject to the electrical equipment/component used from case to case. Depending on the system conditions, the mode of operation, the utilization category, etc., the manufacturer will define ratings, which will be within the range of these limiting values and will comply with the relevant Standards.

Model identification :

Aluminium alloy enclosures		**Stainless steel enclosures**
EJB series	**EJBT series**	**EJBX series**
AQS-1	-	-
EJB-01	EJBT0	EJBX-01
-	-	EJBX-01B
EJB-1	EJBT1	EJBX-1
EJB-2	EJBT2	EJBX-2
-	EJBT2CB	-
-	EJBT2C	-
EJB-3	EJBT3	EJBX-3
EJB-3B	EJBT3B	EJBX-3B
EJB-4	EJBT4	EJBX-4
EJB-4B	EJBT4B	EJBX-4B
EJB-45	EJBT45	EJBX-45
EJB-45B	EJBT45B	EJBX-45B
EJB-48BA	-	-
EJB-5	EJBT5	EJBX-5
EJB-5B	EJBT5B	EJBX-5B
EJB-55	EJBT55	EJBX-55
EJB-55B	EJBT55B	EJBX-55B
EJB-503	-	-
EJB-55C	-	-
EJB-6	EJBT6	EJBX-6
EJB-6B	EJBT6B	EJBX-6B
EJB-7	EJBT7	EJBX-7
EJB-7B	-	-

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Maximum dissipated power:

Table 1

Type			**Maximum dissipated power inside enclosures**			
			Tamb. = +40°C			
Aluminium alloy		Stainless steel	no signalling lamps, only LED are allowed		with lamps and/or LED	without signalling lamps and LED
			T6 / T85 °C	**T5 / T100 °C**	**T5 / T100 °C**	**T4 / T135 °C**
EJBT0 / EJBT2CB	EJB-01	-	30 W	45 W	30 W	100 W
EJBT1 / EJBT2C	EJB-1	EJBX-1	45 W	65 W	45 W	140 W
EJBT2	EJB-2	EJBX-2	60 W	85 W	60 W	190 W
EJBT3	EJB-3	EJBX-3	75 W	110 W	75 W	245 W
EJBT3B	EJB-3B	EJBX-3B	55 W	80 W	55 W	180 W
EJBT4	EJB-4	EJBX-4	100 W	175 W	100 W	350 W
EJBT4B	EJB-4B	EJBX-4B	75 W	130 W	75 W	260 W
EJBT45	EJB-45	EJBX-45	140 W	240 W	140 W	480 W
EJBT45B	EJB-45B	EJBX-45B	120 W	210 W	120 W	430 W
-	EJB-48BA	-	120 W	210 W	120 W	430 W
EJBT5	EJB-5	EJBX-5	210 W	315 W	210 W	600 W
EJBT5B	EJB-5B	EJBX-5B	170 W	250 W	170 W	480 W
-	EJB-503	-	230 W	345 W	230 W	660 W
EJBT55	EJB-55	EJBX-55B	260 W	380 W	260 W	740 W
EJBT55B	EJB-55B	-	260 W	380 W	260 W	740 W
-	EJB-55C	EJB-55	360 W	550 W	360 W	1050 W
EJBT6	EJB-6	EJBX-6	600 W	910 W	600 W	1740 W
EJBE-6B	EJB-6B	EJBX-6B	490 W	720 W	490 W	1390 W
-	EJB-7	-	770 W	1170 W	770 W	2270 W
-	EJB-7B	-	600 W	910 W	600 W	1740 W
-	-	EJBX-7	610 W	930 W	610 W	1780 W
-	AQS-1	-	100 W	150 W	100 W	280 W

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Table 2

Type			**Maximum dissipated power inside enclosures**			
			Tamb. = +55°C			
Aluminium alloy		Stainless steel	no signalling lamps, only LED are allowed		with lamps and/or LED	without signalling lamps and LED
			T6 / T85 °C	**T5 / T100 °C**	**T5 / T100 °C**	**T4 / T135 °C**
EJBT0 / EJBT2CB	EJB-01	-	25 W	40 W	25 W	80 W
EJBT1 / EJBT2C	EJB-1	EJBX-1	34 W	50 W	34 W	105 W
EJBT2	EJB-2	EJBX-2	45 W	65 W	45 W	142 W
EJBT3	EJB-3	EJBX-3	56 W	82 W	56 W	184 W
EJBT3B	EJB-3B	EJBX-3B	40 W	60 W	40 W	135 W
EJBT4	EJB-4	EJBX-4	75 W	130 W	75 W	262 W
EJBT4B	EJB-4B	EJBX-4B	56 W	100 W	56 W	195 W
EJBT45	EJB-45	EJBX-45	105 W	180 W	105 W	360 W
EJBT45B	EJB-45B	EJBX-45B	90 W	160 W	90 W	320 W
-	EJB-48BA	-	90 W	160 W	90 W	320 W
EJBT5	EJB-5	EJBX-5	160 W	235 W	160 W	450 W
EJBT5B	EJB-5B	EJBX-5B	130 W	190 W	130 W	360 W
-	EJB-503	-	176 W	255 W	176 W	495 W
EJBT55	EJB-55	EJBX-55B	200 W	300 W	200 W	565 W
EJBT55B	EJB-55B	-	160 W	235 W	160 W	450 W
-	EJB-55C	EJB-55	270 W	400 W	270 W	765 W
EJBT6	EJB-6	EJBX-6	460 W	680 W	460 W	1300 W
EJBE-6B	EJB-6B	EJBX-6B	370 W	550 W	370 W	1040 W
-	EJB-7	-	590 W	890 W	590 W	2090 W
-	EJB-7B	-	460 W	680 W	460 W	1300 W
-	-	EJBX-7	470 W	690 W	470 W	1310 W
-	AQS-1	-	75 W	110 W	75 W	205 W

Constructional characteristics

Degree of protection (EN 60529): IP66 (with operators installed);
IP66/67 (without operators installed).

Ambient temperature ranges

- **-20°C ÷ +40°C** or **-20°C ÷ +55°C**: Command, control and signalling units for group I (made in stainless steel only), group IIB, IIB+H_2 and group IIIC;
- **-40°C ÷ +40°C** or **-40°C ÷ +55°C**: Command, control and signalling units for group IIB, IIB+H_2 and group IIIC with polycarbonate pilot lights;
- **-60°C ÷ +40°C** or **-60°C ÷ +55°C**: Command, control and signalling units for group IIB, IIB+H_2 and group IIIC without polycarbonate pilot lights.

Cable entries

The accessories used for cable entries and plugs for not used holes shall be subject of separate certification, suitable for type of enclosure execution, according to the applicable standards.

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Warning labels:
"*Use screws of quality A2-70 according UNI 7323 with tensile strength of at least 700 N/mm²*";
"*Warning - do not open when energized*".

For equipment with capacitors:
"*After de-energizing. Wait 10 minutes before opening*".

For enclosures with batteries or cells:
"*Warning – Do not open when an explosive atmosphere is present*".

For equipment with Temperature class T5:
"*Use cables suitable for temperature of 90°C*".

For equipment with Temperature class T4:
"*Use cables suitable for temperature of 100°C*".

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Routine tests
The routine overpressure test shall be carried out on empty enclosure with the static method (paragraph 15.2.3.2 of EN 60079-1 Standard), at:

- 14.0 bar on all EJB enclosures for minimum ambient temperature until -20 °C;
- 16.0 bar on all EJB enclosures for minimum ambient temperature until -60 °C.

[17] **Special conditions for safe use (X)**
With the updating to the new standards the following special condition for safe use are added; moreover the X suffix is added to the certificate number and beginning from this supplement it becomes ***CESI 01 ATEX 027X.***

- The accessories used for cable entries and for closing unused openings shall be certified according to EN 60079-0, EN 60079-1 and EN 60079-31. A minimum degree of protection IP66/67 shall be guaranteed according to EN 60529 standard.
- The command, control and signalling units shall be used in the following ambient temperature range:
  - from -20°C up to +40°C/+55°C: all versions of command, control and signalling units for group I (made in stainless steel only), group IIB, IIB+H_2 and group IIIC;
  - from -40°C up to +40°C/+55°C: all versions of command, control and signalling units for group IIB, IIB+H_2 and group IIIC with polycarbonate pilot lights;
  - from -60°C up to +40°C/+55°C all versions of command, control and signalling units for group IIB, IIB+H_2 and group IIIC without polycarbonate pilot lights.
- The minimum distance between flameproof flanged joint of the enclosure and external obstacle should be:
  - 20 mm for IIB execution.
  - 30 mm for IIB+H_2 execution.
- For radio application the antenna shall be installed in safe area or it shall respect one of the specific type of protection indicated in EN 60079-0 and installed according to EN 60079-14.
  If the radio antenna is installed into the Ex db enclosure it shall respect the following characteristics:
  - Radio frequency: from 9 KHz to 60 GHz.
    Threshold power, effective output power of the transmitter multiplied by the antenna gain:
    - for group IIB = 3,5 W;
    - for group IIB+H_2 = 2,0 W.

    Thermal initiation time:
    - for group IIB = 80 μs;
    - for group IIB+H_2 = 20 μs.

    For pulsed radar and other transmissions where the pulses are not short compared with the thermal initiation time, the threshold energy values shall not exceed those given below:
    - for group IIB = 250 μJ;
    - for group IIB+H_2 = 50 μJ.

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Manufacturing conditions:

- For ignition transformers application, the following electrical characteristics are admitted:
  - Primary voltage: 1000 V max.
  - Secondary voltage: 20 kV (impulse 25 kV max for 3 msec.).
  - Secondary current: 50 mA.
- For ignition transformer applications (only EJB-7 type) are admitted installation of single-phase or three-phase transformers having the maximum dissipated power (W) lower than the maximum dissipated power admitted in Table 1 and Table 2.
  Furthermore, the box type EJB-7 is suitable also for installation of three-phase power transformer with maximum power of 15 kVA.
- For motor inverter application, the following configuration are admitted:

Enclosure size	Motor inverter max. power [kW]		Max. dissipated power [W]	Max. Cooling fun flowrate [m^3/h]
	T_a +40°C	T_a +55°C		
EJB-4	2.2	1.5	73	44
EJB-45	2.2	1.5	73	44
EJB-5	5.5	4.0	172	44
EJB-6	7.5	5.5	232	88
EJB-7	7.5	5.5	323	88

- For surge protective devices application, the following configuration are admitted:

PDR type	Max. protection [kA]	Protection Breaker (C curve type) [A]
PDR65	65	50
PDR40	40	40
PDR20	20	25
PDR8	8	20

- On the enclosures types EJB-55, EJB-6, EJB-6B, EJB-7, EJB-7B can be installed MCCB (MOLDED CASE CIRCUIT BREAKER) automatic breakers or on load isolator switches, three or four poles for rated current from 800 A up to 1000 A.
- On the bigger sizes of enclosures type EJB-45, EJB-5, EJB-5B, EJB-55, EJB-55B, EJB-6, EJB-6B, EJB-7, EJB-7B can be installed MCCB automatic breakers or on load isolator switches, three or four poles for rated current up to 630 A suitable for DC circuits with rated voltage up to 750 VDC.
  - MCCB size 630 A is suitable for max current 630 A at max voltage 360 VDC at ambient temperature +40°C or derated to 500 A for an ambient temperature of +55°C at maximum voltage 500 VDC.
  - MCCB size 800 A is derated for max current 630 A at max voltage 750 VDC for ambient temperature of +55°C.

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[18] **Essential Health and Safety Requirements**

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

EN 60079-0: 2012 + A11:2013 – Explosive atmospheres – Part 0: Equipment - General requirements;

EN 60079-1: 2014 Explosive atmospheres – Part 1: Equipment protection by flameproof enclosure "d";

EN 60079-31: 2014 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t".

[19] **Descriptive documents** (prot. EX- B6027366)

- Technical note A4-6584 (pg. 8)	rev.0	dated	2016.07.19
- Safety, maintenance and mounting instructions F-276C (pg. 9)	rev.3	dated	2016.07.19
- Declaration of Conformity Facsimile no. 0019 (pg. 1)		dated	2016.07.19
- Drawing no. A3-6583 (1 sheet)	rev.0	dated	2016.07.19
- Drawing no. A3-6210 (1 sheet)	rev.2	dated	2016.01.14
- Drawing no. A4-4129 (2 sheets)	rev.2	dated	2013.01.25
- Drawing no. A3-5390 (5 sheets)	rev.1	dated	2016.01.14
- Drawing no. A3-6281 (7 sheets)	rev.0	dated	2014.10.30

One copy of all documents is kept in CESI files.

Certificate history

Issue nr	Issue Date	Summary description of variation
10	2016.10.28	Updating to standards EN 60079-0: 2012 + A11:2013, EN60079-1:2014 and EN60079-31:2014. New minimum ambient temperature -60°C. New enclosures type EJBX-01 and EJBT... series have been added. Special condition for safe use have been added.
09	2015.02.23	New MCCB automatic breakers or on load isolator switches (MOLDED CASE CIRCUIT BREAKER) has been added.
08	2013.05.15	New type of equipment named Surge Protection Device.
07	2012.05.31	New type of equipment named PDTrac Monitoring device has been added.
06	2012.04.06	Updating to standards EN60079-0:2009, EN60079-1:2007 and EN60079-31:2009. New size EJB-55B has been added, updating to EJB-55 and EJB-55C codes.
05	2010.04.26	Updating to standard EN 60079-1: 2007. New sizes type EJB-7 and EJB-7B were added, new minimum ambient temperature -50°C. Installation of batteries, inverters, surge protective devices, power transformers and of radio frequency sources inside the boxes. Use of sealed cable glands for fiber optic cables. New exec. IM2 Ex d I (for stainless steel enclosure only).
04	2004.06.04	Installation of RX unit and IBUC unit into EJB-6 enclosure type.
03	2008.02.06	Updating to standards EN 60079-0 (2006), EN60079-1 (2004) and EN 61241-0 (2006), EN 61241-1 (2004). New characteristics for ignition transformers. New models of box type EJB.. and EJBX.., new exec. IIB+H2.
02	2005.06.08	Mounting of ignition transformers.
01	2003.10.10	New CCFE-01 and AQS.-1 and AQSE-1 types were added. New category II2GD for gases and dusts and use of rectangular glass windows. Max. current admitted on contacts 650A.
00	2001.04.12	First Issue of the Certificate.