2009

CESI

CERTIFICATE

[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 105X /03

[4] Product: Terminal boxes Series **S... S.1... GUA... GUF... EAH...**

[5] Manufacturer: **ELFIT S.p.A.**

[6] Address: Via Aquileia 10, I -34070 Villesse (GO) - Italy

[7] This supplementary certificate extends EC–Type Examination Certificate CESI 01 ATEX 105X 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- C2004634.

[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 product shall include the following:

Ex II 2GD Ex db IIC T6, T5, T3 Gb *and* Ex tb IIIC T85°C, T100°C, T200°C Db ; IP66/67

Ex II 2GD Ex eb IIC T6, T5, T4 Gb *and* Ex tb IIIC T85°C, T100°C, T135°C Db ; IP66/67

Ex II 2GD Ex i IIC T6, T5, T4 Gb *and* Ex tb IIIC T85°C, T100°C T 135°C Db ; IP66/67

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Prepared	**Verified**	**Approved**
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Schema di certificazione CESI-ATEX

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 01 ATEX 105X /03**

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

3.1 - Upgrade to the Directive 2014/34/UE.
3.2 - Upgrade to the new standard Editions EN IEC 60079-0:2018; EN 60079-1: 2014; EN 60079-7: 2015 / A1:2018 EN 60079-11: 2012; EN 600790-31: 2014.
3.3 - Different types of painting were added.
3.4 - Upgrade of marking label.
3.5 - Added special conditions for safe use (X).

Description of equipment

The terminal boxes series S... - S.1... - GUA... - GUF... - EAH... are used in hazardous area, indoor and/or outdoor, where inflammable or explosive vapours gases or dust are present; they can have type of protection: Ex db, Ex eb, Ex ia, Ex ib and Ex tb. Terminal boxes with type of protection Ex ia are admitted for EPL Gb only.
The Terminal boxes are suitable for the installation of terminals for the connection of electrical cables and they can be manufactured in:
- Aluminium alloy EN AB 43000, EN AB 44100 according to UNI EN 1676.
- Stainless steel AISI 303, AISI 304, AISI 316L.
- Cast iron UNI EN 1563 GJS-400-15 or GJS-400-18.

All terminal boxes made of aluminium alloy or Stainless steel are suitable for an ambient temperature range of - 40°C ÷ + 150°C , while the terminal boxes manufactured in cast iron are for an ambient temperature range of - 20°C ÷ + 150 °C.

The terminal boxes can be supplied with external painting of thickness ≤ 200 μm; other types of painting in non-metallic materials can be used, in that cases a warning label is added regarding the risk of electrostatic charge.

The enclosure cable entries are made by threaded holes are conforming to NPT ANSI ASME B1.20.1, but are also foreseen alternative tapered and cylindrical threads.
As alternative to NPT ANSI/ASME B1.20.1 threads, the entries into enclosure can be threaded Gk ½", ¾", 1", 1 ¼", 1 ½", 2" in compliance to Annex 1, § 5.3.1 of CEI EN 60079-1: 2008 standard.
Normally, these types of threads are used for Italian market.

The terminals blocks installed inside the enclosures with type of protection "Ex e" and "Ex i". are subjects to a separate ATEX certification as components according to EN IEC 60079-7 standard.
The terminal blocks normally used, are manufactured by Cabur or Weidmuller, but other ATEX certified equivalent types of terminals can be used.

The terminal boxes with type of protection "Ex e" shall be fitted in accordance with the manufacturer's instructions and, when installed, they shall guarantee the minimum clearance and creepage distances required by table 2 of EN IEC 60079-7 standard.
For terminal boxes with type of protection "Ex i" the distances between "Intrinsic Safety Circuits" and "Non-Intrinsic Safety Circuits" or between "Separate Intrinsic Safety Circuits" shall be in compliance with the EN 60079-11 standard.

The terminal boxes series "S... - S.1... - GUA... - GUF... - EAH..." can contain several terminals with different rated cross section. When selecting the allowed current for the section, it is necessary to consider the maximum current allowed by the terminal and by the connection cable or conductor.

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In the following tables are reported, for each box, the section and the maximum number of terminals admissible and the maximum dissipated power.

Terminal boxes executions "Ex db"

Terminal box			Section (mm^2) and max. number of terminals									Max. dissipated Power inside		
Size	type	vol. (cm3)	1.5	2.5	4	6	10	16	25	35	70	Ta (C°)	Sect. (mm^2)	Pover (W)
14, 24	S1	103	/	/	3	/	/	/	/	/	/	40	4	1.8
	S	126	/	/	3	/	/	/	/	/	/	65	4	0.9
												150	4	1.0
16, 26, 36	S. 1	286	8	8	6	/	/	/	/	/	/	40	4	2.8
	S	263	8	8	6	/	/	/	/	/	/	65	4	1.9
	GUA-EAH-GUFX	286	8	8	6	/	/	/	/	/	/	150	4	2.2
27, 37, 47	S. 1	447	10	10	8	6	5	/	/	/	/	40	4	4.1
	S	447	10	10	8	6	5	/	/	/	/	65	4	2.8
												150	4	3.2
19, 29, 39, 49, 59, 69	S. 1	1029	16	16	12	9	7	6	4	4	3	40	70	17.4
	S	1195	16	16	12	10	8	7	5	5	4	65	70	13.5
	GUA-EAH-GUFX	1055	16	16	12	10	8	7	5	5	4	150	4	5.6
Max. Current (A)		TA 40 °C	10	12,5	20	24	30	48	75	105	175	/	/	/
		TA 65 °C	8	10,5	16	20	24	40	65	88	150	/	/	/
		TA 150 °C	8	10,5	16	20	24	40	65	88	150	/	/	/
Max. current density (A/mm^2) for terminals and connection cables			6,6	5	5	4	3	3	3	3	2,5	/	/	/

Terminal boxes executions" Ex e" and "Ex i"

Terminal box			Section (mm^2) and max. number of terminals							Max. dissipated Power inside		
Size	type	Vol. cm3)	1.5	2.5	4	6	10	16	25	Tamb (C°)	Sect. (mm^2)	Pow (W)
14, 24	S1	103	/	/	3	/	/	/	/	40	4	1.0
	S	126	/	/	3	/	/	/	/	65	4	0.5
										80	4	0.5
16, 26, 36	S. 1	286	8	8	6	/	/	/	/	40	4	2.0
	S	263	8	8	6	/	/	/	/	65	4	1.1
	GUA-EAH-GUFX	286	8	8	6	/	/	/	/	80	4	1.1
27, 37, 47	S. 1	447	10	10	8	6	5	/	/	40	4	2.9
	S	447	10	10	8	6	5	/	/	65	4	1.6
										80	4	1.6
19, 29, 39, 49, 59, 69	S. 1	1029	16	16	16	9	7	6	4	40	70	6.6
	S	1195	16	16	16	10	8	7	5	65	70	3.6
	GUA-EAH-GUFX	1055	16	16	16	10	8	7	5	80	4	3.7
Max. Current (A)		TA 40 °C	8	10.5	17	20	24	40	65	/	/	/
		TA 65 °C	5.5	7.5	12	14	17	29	47	/	/	/
		TA 150 °C	5.5	7.5	12	14	17	29	47	/	/	/
Max. current density (A/mm^2) for terminals and connection cables			6,6	5	5	4	3	3	3	/	/	/

The maximum service temperature of the boxes shall not exceed 160 °C.

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Equipment identification codes

The terminal boxes series "S… S.1… GUA… GUF… EAH…" are identified by a code with the following meaning:

A – B – C – D – E – F – G – H – I

A = Code of the Series S…- S.1… - GUA… - GUF… – EAH…
B = Number and position of hubs A, B, C, D, L, M, T, W, X, WS
C = Hub diameter: 1, 2, 3, 4, 5, 6
D = Size of enclosure: 4, 6, 7, 9
E = Type of thread: N, I, I2, C, P, NC, blank
F = Type of material: Blank = aluminium - S = stainless steel – GJ = cast iron
G = Enclosure: Blank= not painted - V = external painting
H = Cross section of terminal: 2, 4, 6, 10, 16, etc.
I = Quantity of terminals: 1, 2, 3 etc.

Details of sub code

Number and position of hubs

Identification code	Number	Position
A	1 cable entry	1 on the side
B	2 cable entries	1 on the bottom and 1 on the side
C	2 cable entries	2 on the opposite sides
L	2 cable entries	2 on the sides to 90°
T	3 cable entries	3 on the sides
X	4 cable entries	4 on the sides
D	3 cable entries	1 on the bottom and 2 on the opposite sides
M	3 cable entries	1 on the bottom and 2 on the sides to 90°
W	4 cable entries	1 on the bottom 3 on the sides
WS	2 cable entries	1 on the bottom and 1 on the side

Hub diameter

Identification digit	Hub diameters (inches)	Hub diameter (metric)
1	½"	M20
2	¾"	M25
3	1 "	M32
4	1 ¼ "	M40
5	1 ½ "	M50
6	2 "	M63

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Size of enclosure

Identification digit	Size of enclosure (Ø mm)
4	54
6	80
7	95
9	130

Type of threads

Identification digit	Type of thread	Examples of coding		
N	NPT ANSI ASME B1.20.1	SX.24.IN	ST-36N	GUAL-59N
I	ISO metric pitch 1.5 mm	SX.24.1I	ST-36I	GUAL-59I
I2	ISO metric pitch 2 mm	SX.24.1I2	ST-36I2	GUAL-59I2
C	GAS UNI 228/1	SX.24.IC	ST-36IC	GUAL-59IC
P	Pg DIN 40430	SX.24.IP	ST-36P	GUAL-59P
NC	NPSM ANSI ASME B1.20.1	SX.24.NC	ST36-NC	GUAL-59NC
Blank	Gk CEI EN 60079-1	SX.24.1	ST-36	GUAL-59

Cross section of terminal blocks

Digit	1	2	4	6	10	16	25	35	70
Size mm²	1.5	2.5	4	6	10	16	25	35	70

Quantity of terminal blocks

Digit	1	2	3	4	6	7	8	9	10	11	12	13	14	15	16
Quantity	1	2	3	4	6	7	8	9	10	11	12	13	14	15	16

Depending on of type of protection, the terminal boxes "S... S.1... GUA… GUF... EAH..." can be marked as follows:

II 2GD **Ex db IIC T6,T5,T3 Gb**
Ex tb IIIC T85°C,T100°C,T200°C Db
IP 66/67

II 2GD **Ex db IIC T6,T5,T4 Gb**
Ex tb IIIC T85°C,T100°C,T135°C Db
IP 66/67

II 2GD **Ex i IIC T6,T5,T4 Gb** *with* i = «ia» *or* «ib»
Ex tb IIIC T85°C,T100°C,T135°C Db
IP 66/67

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Electrical characteristics

Ex d" Terminal boxes

Rated voltage of terminals:	750 Vac/dc
Rated frequency:	50/60 Hz
Rated cross section of terminal:	from 1.5 mm^2 up to 70 mm^2
Rated current of terminals:	from 8 A up to 175 A
Current density of terminals and cables wiring:	from 2.5 A/mm^2 up to 6.6 A/mm^2
Degree of protection of enclosures:	IP66 or IP67
Ambient temperature:	-40 or -20 ÷ +40 or +65°C or +150°C

"Ex e" and "Ex i" Terminal boxes

Rated voltage of terminals:	630 Vac/dc
Rated frequency:	50/60 Hz
Rated cross section of terminal:	from 1.5mm^2 up to 25mm^2
Rated current of terminals:	from 5.5A up to 65A
Current density of terminals and cables wiring:	from 3A/mm^2 up to 6.6 A/mm^2
Degree of protection of enclosures:	IP66 or IP67
Ambient temperature:	-40 or -20 ÷ +40 or +65°C or +80°C

The ratings specified are maximum values; actual values will be subject to the electrical equipment/component used from case to case.

Cable entries

The accessories used for cable entries into enclosures shall be subject of separate certification, suitable for type of protection of terminal box and guarantee a degree of protection IP66 or IP67. To guarantee the degree of protection IP66 or IP67 the threaded coupling accessory-enclosure shall be sealed with "Loctite 577" for ambient temperature up to +80 °C or "Loctite 648" for ambient temperature up to +150 °C, for at least two threads engaged.

Warning labels

- For all terminal boxes
  "Warning – Do not open when energized"
- For boxes with temperature class T5
  "Use only cables for minimum temperature of 100 °C"
- For boxes with temperature class T4
  "Use only cables for minimum temperature of 130 °C"
- For boxes with temperature class T3
  "Use only cables for minimum temperature of 180 °C"
- For boxes with "Ex i" circuits
  "Contains intrinsically safe circuits"
  (when this warning is not present the boxes shall be externally painted in light blue colour)
- For boxes with external painting made in non-metallic material
  "Warning – Potential electrostatic charging hazard – see instructions"
- For boxes of small dimension (size 4 - Ø 54 mm) the following warning label shall be added to the Ex marking label:
  "Use only cables suitable for minimum temperature of 100 °C" (for class T5)" or
  "Use only cables suitable for minimum temperature of 130 °C" (for class T4)" or
  "Use only cables suitable for minimum temperature of 180 °C" (for class T3)"

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[16] **Report n.** EX- C2004634

Routine tests

Overpressure routine tests for Tamb.= - 20°C
All the "Ex db" terminal boxes series S.. - S.1... - GUA... - GUF... - EAH... " **are exempted** from routine overpressure tests as they have positively passed the test carried out at 35.5 bar, corresponding to 4 times the reference pressure for the minimum Tamb = - 20 °C.

Overpressure routine tests for Tamb.= - 40°C (Only for boxes made in Aluminium alloy and INOX)
The terminal boxes "EX db" series and types S-14, 24, 16, 26, 36 // S.1-14, 24, 16, 26, 36, // GUFX- EAH 26,36 // GUA-16, 26, 36, **are exempted** from routine overpressure tests, as they have positively passed the test carried out at 51.5 bar, corresponding to 4 times the reference pressure for Tamb = - 40 °C.
The terminal boxes series an types: S-27, 37, 47, 49, 59, 69 // S.1-27, 37, 47, 19, 29, 39, 49, 59, 69 // GUA-49, 59, 69 **shall be subjected** to routine overpressure test at 19.3 bar, corresponding to 1.5 times the reference pressure for the minimum Tamb = - 40 °C.

Dielectric test
For the terminal boxes with type of protection "Ex eb", the dielectric test with applied voltage between the supply terminals and earth shall be performed, according to clause 7.1 of the EN IEC 60079-7, at 2U + 1000V with a minimum value of 1500V (U = rated voltage).

[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 extension it becomes **CESI 01 ATEX 105X**.*

- Cables connected to the terminals shall not reduce the clearance and creepage distances of the terminal boxes with type of protection Ex-e and Ex-i. The use of terminal block's accessories (bridges) can reduce the maximum rated voltage of the terminal; the instructions of the manufacturer must be followed.
- The cable entry devices and blanking plugs shall be subject of separate ATEX certification for type of protection and operating temperatures indicated on the plate. To guarantee the degree of protection IP 66 or IP 67 the threaded coupling accessory-enclosure shall be suitable sealed.
- The conditions of the installation and use of the terminal boxes included within the safety instructions, provided by the Manufacturer, shall be strictly respected.
- For terminal boxes painted with non-conductive paint having thickness, the following label shall be applied: "Warning – potential electrostatic charging hazard. See Instructions".

[18] **Essential Health and Safety Requirements**
Compliance with the Essential Health and Safety Requirements is not affected by this variation.
EHSR are assured by compliance with safety conditions and by compliance with the following standards:

- EN IEC 60079-0: 2018	Explosive atmospheres - Part 0 -	General requirements
- EN 60079-1: 2014	Explosive atmospheres - Part 1 -	Protection by enclosures "d".
- EN IEC 60079-7: 2015/A1: 2018	Explosive atmospheres - Part 7 -	Protection by increased safety "e".
- EN 60079-11: 2012	Explosive atmospheres - Part 11-	Protection by intrinsic safety "i".
- EN 60079-31: 2014	Explosive atmospheres - Part 31 -	Enclosure with protection type "t".

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[19] **Descriptive documents** (prot. EX- C2004637)

- *Technical Note A4-7687 rev. 0 (13 pg.)	dated	06.07.2021
- *Safety Instructions A17 rev. 4 (10 pg.)	dated	06.07.2021
- *Drawing A1-5674 rev. 01	dated	06.07.2021
- *Drawing A1-5675 rev. 01	dated	06.07.2021
- *Drawing A1-5676 rev. 01	dated	06.07.2021
- *Drawing A2-5677 rev. 01	dated	06.07.2021
- *Drawing A2-5678 rev. 01	dated	06.07.2021
- *Drawing A2-5679 rev. 01	dated	06.07.2021
- *Drawing A3-5680 rev. 01	dated	06.07.2021
- *Drawing A3-5681 rev. 01	dated	06.07.2021
- *Drawing A3-5682 rev. 01	dated	06.07.2021
- *Drawing A4-5684 rev. 01	dated	06.07.2021
- *Drawing A4-5685 rev. 01	dated	06.07.2021
- *Drawing A4-5686 rev. 01	dated	06.07.2021

*Note: an * is included before the title of documents that are new or revised annexed to this supplement.*
One copy of all documents is kept in CESI files.

Certificate history

Issue N.	Issue Date	Summary description of variation
03	2022.03.21	3.1- Upgrade to the Directive 2014/34/UE requirements 3.2- Upgrade to the new standard Editions EN IEC 60079-0:2018; EN 60079-1: 2014; EN IEC 60079-7: 2015 / A1:2018; EN 60079-11: 2012; EN 600790-31: 2014 3.3 - Different types of painting were added. 3.4 - Upgrade of marking label. 3.5 - Added special conditions for safe use (X).
02	2007.05.16	2.1 – Upgrade to new standard editions EN 60079-0: 2006, EN 60079-1: 2004, EN 6079-7: 2003, EN 60079-11: 2007, EN 61241-0: 2006, EN61241-1: 2004 2.2 – Upgrade of nameplate
01	2006.01.27	1.1 – Constructive variations 1.2 – Use of terminal blocks with section of 1.5 mm^2 1.3 – New type of protections "EEx e", "EEx i" and "EEx EEx d[i] 1.4 – New terminal blocks EEx d[i] IIC T6 or T5
00	2001.12.01	First issue of certificate CESI 01 ATEX 105