Benefits of Using Third Party Testing

Webinar 2: Power and distribution blocks tested according to IEC (AS/NZ) 60947-7-1

nVent ERIFLEX Team

2020-05-26

Agenda

Terminals for external conductors and AS/NZ 61439-1

What is AS/NZ 60947-7-1?

Example of products tested according to AS/NZ 60947-7-1

Conclusion

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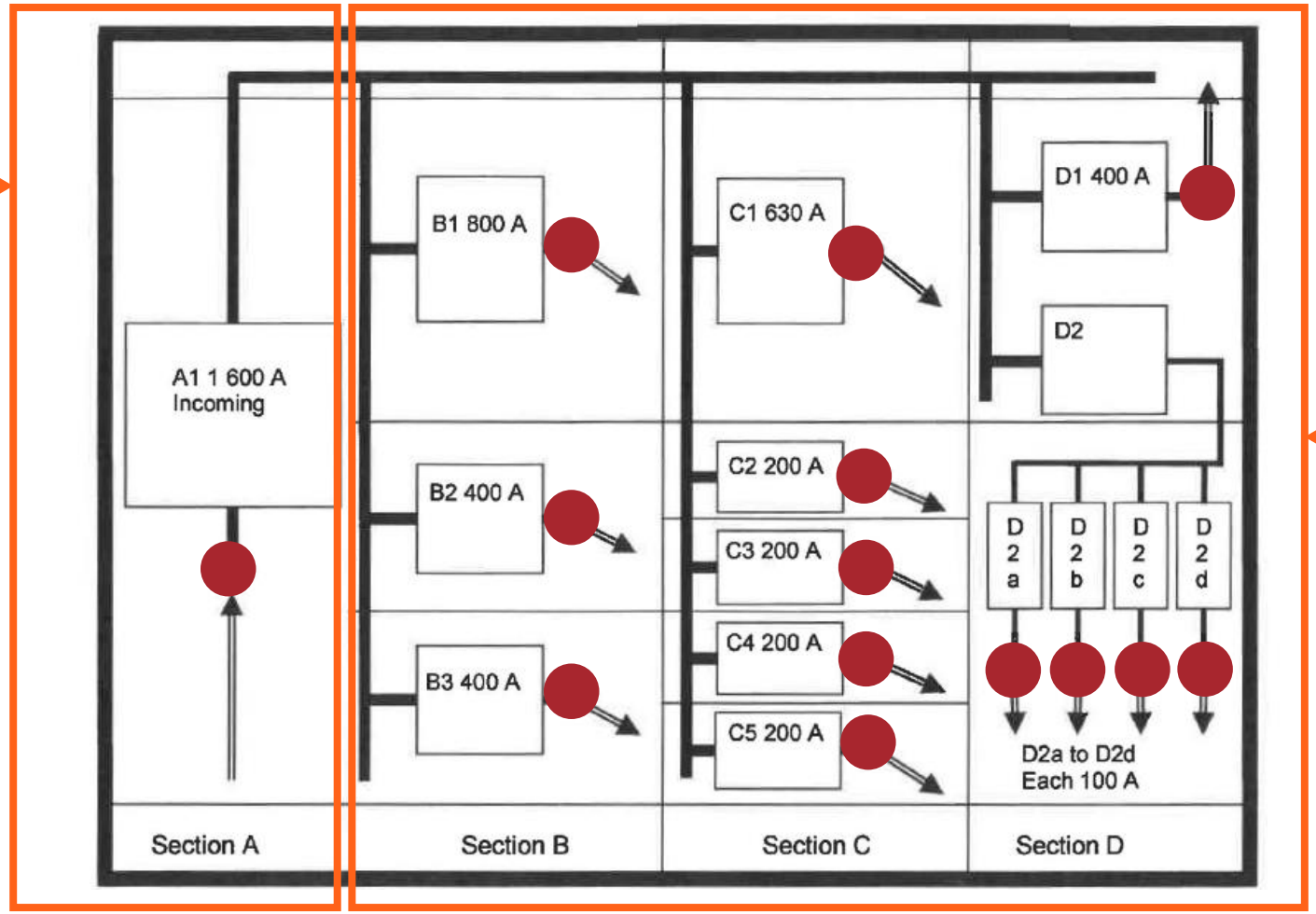
Terminals for external conductors and AS/NZ 61439-1

- From Figure E.1 of AS/NZ 61439-1: Functional units as incoming and outgoing units and terminals for external conductors

Incoming Unit (3.1.9)



Terminal for external conductors (8.8)

Outgoing Units (3.1.10)

Terminals for external conductors and AS/NZ 61439-1

- **Section 8.8 is titled “terminals for external conductors”**

- **Lists various requirements for these terminals including the following key points:**

- **Point A - THE KEY POINT :**

“The terminals shall be such that the external conductors may be connected by a means (screws, connectors, etc.) which ensures that the necessary contact pressure corresponding to the current rating and the short-circuit strength of the apparatus and the circuit is maintained.”

- **Point B:**

“The ASSEMBLY manufacturer shall indicate whether the terminals are suitable for connection of copper or aluminium conductors, or both.”

“In the case of enclosures and conductors of aluminium or aluminium alloys, particular consideration shall be given to the danger of electrolytic corrosion.”

- **Point C:**

“The conductors shall not be subjected to stresses, which are likely to reduce their normal life expectancy.”

Terminals for external conductors and AS/NZ 61439-1

- **Section 8.5.5 is focused on maintenance and also says:**

- **Point D:**

"Functional units mounted on the same support (mounting plate, mounting frame) and their terminals for external conductors shall be so arranged as to be accessible for mounting, wiring, maintenance and replacement." "The ASSEMBLY manufacturer shall indicate whether the terminals are suitable for connection of copper or aluminium conductors, or both."

"The terminals, excluding terminals for protective conductors, shall be situated at least 0,2 m above the base of the ASSEMBLIES and, moreover, be so placed that the cables can be easily connected to them."

Terminals for external conductors and AS/NZ 61439-1

- How can we ensure the requirements of points A, B, C and D are properly met?
- ANSWER: Utilize terminal blocks tested according to IEC 60947-7-1
- But what is it..?

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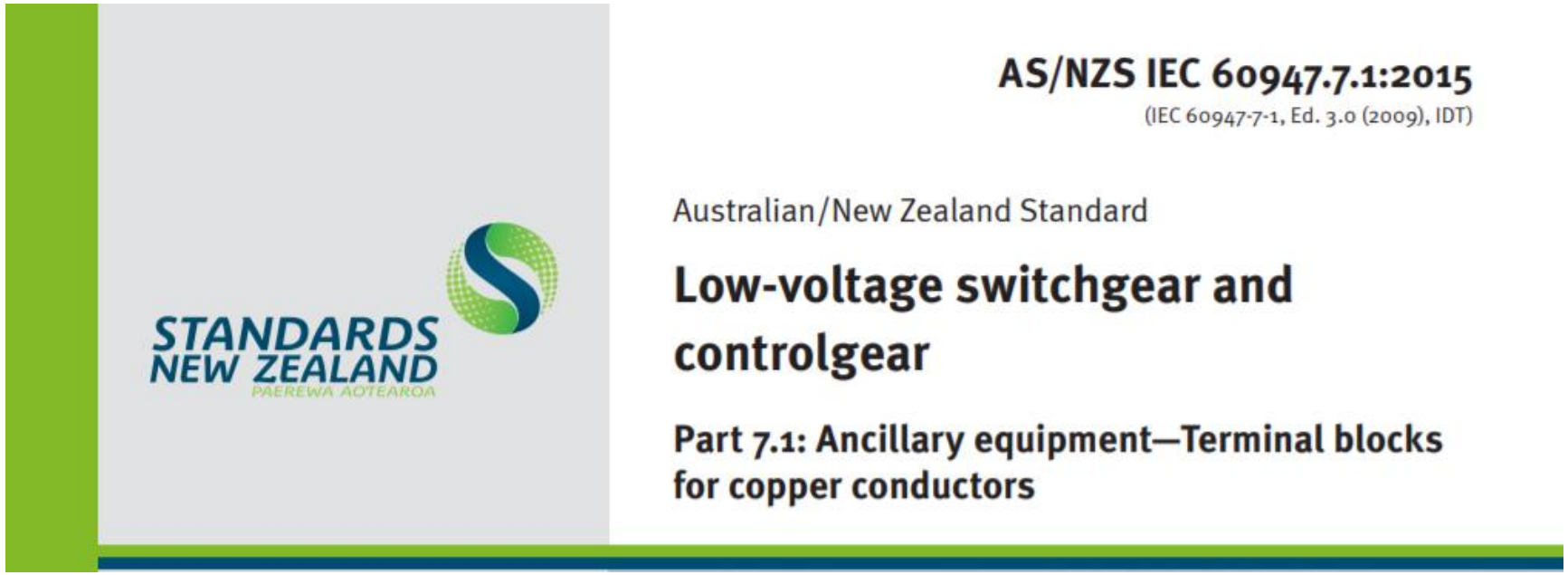
What is AS/NZ 60947-7-1?

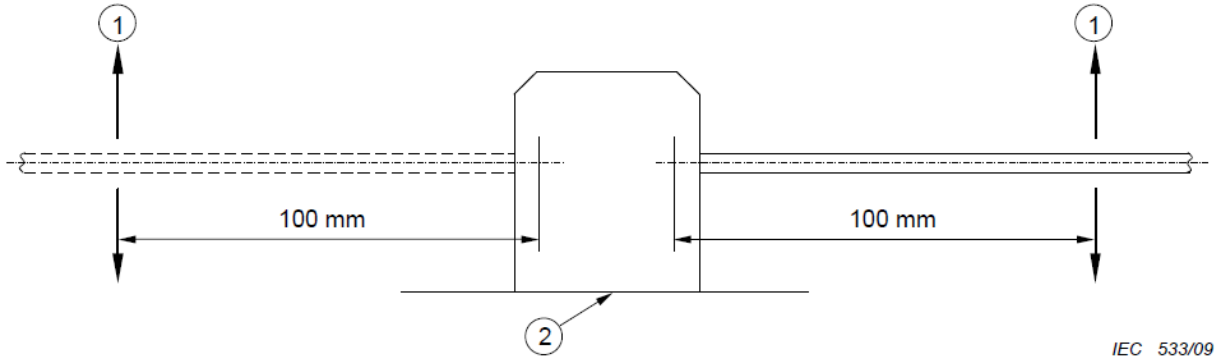
- **Scope:**

(…) specifies requirements for terminal blocks with screw-type or screwless-type clamping units primarily intended for industrial (…) use (…) to provide electrical and mechanical connection between copper conductors. It applies to terminal blocks intended to connect round copper conductors, with or without special preparation, having a cross-section between 0,2 mm2 and 300 mm2 (…), intended to be used in circuits (…) not exceeding 1000 V a.c. up to (…) 1500 V d.c.”



What is AS/NZ 60947-7-1?

- **Mechanical characteristics are verified in clause 8.3:**
- attachment of the terminal block on its support (figure below);
- mechanical strength of clamping units;
- attachment of the conductors to the clamping unit;
- rated cross-section and rated connecting capacity.



Key

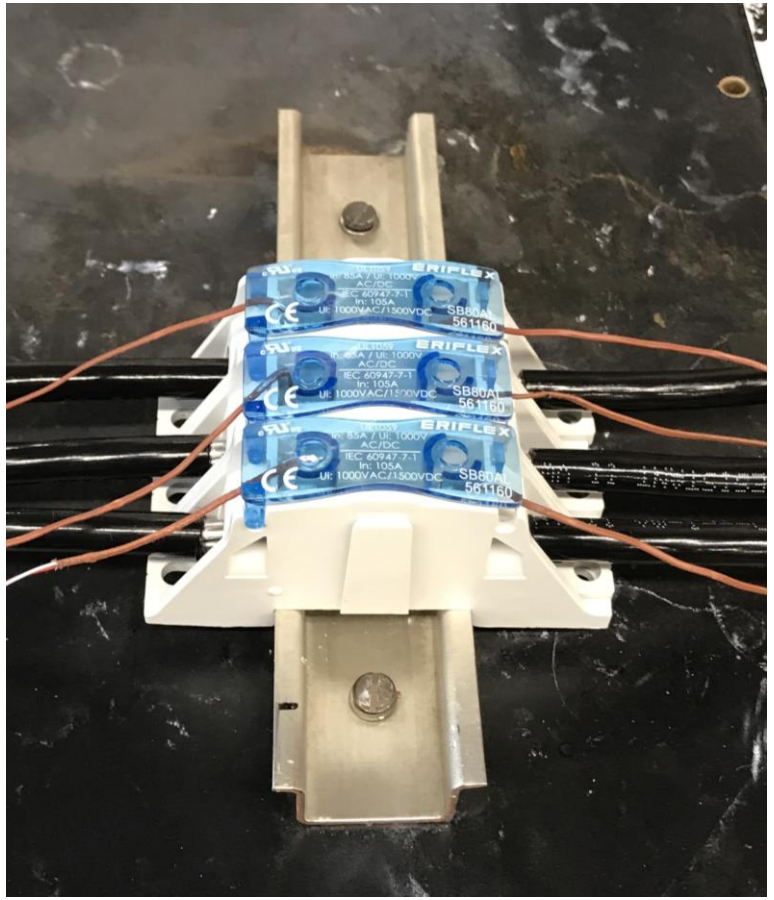
1 Force

2 Rail or support

What is AS/NZ 60947-7-1?

- **Electrical characteristics are verified in clause 8.4:**
- verification of clearances and creepage distances;
- dielectric test;
- verification of the voltage drop;
- temperature-rise test;
- short-time withstand current test;

- **Thermal characteristics are verified in clause 8.5:**
- Flame test.



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Example of products tested according to AS/NZ 60947-7-1

- **nVent ERIFLEX Power Blocks**

Example of products tested according to AS/NZ 60947-7-1

➢ **Features:**

Compactness !

Modular snap-together blocks for multi-pole applications

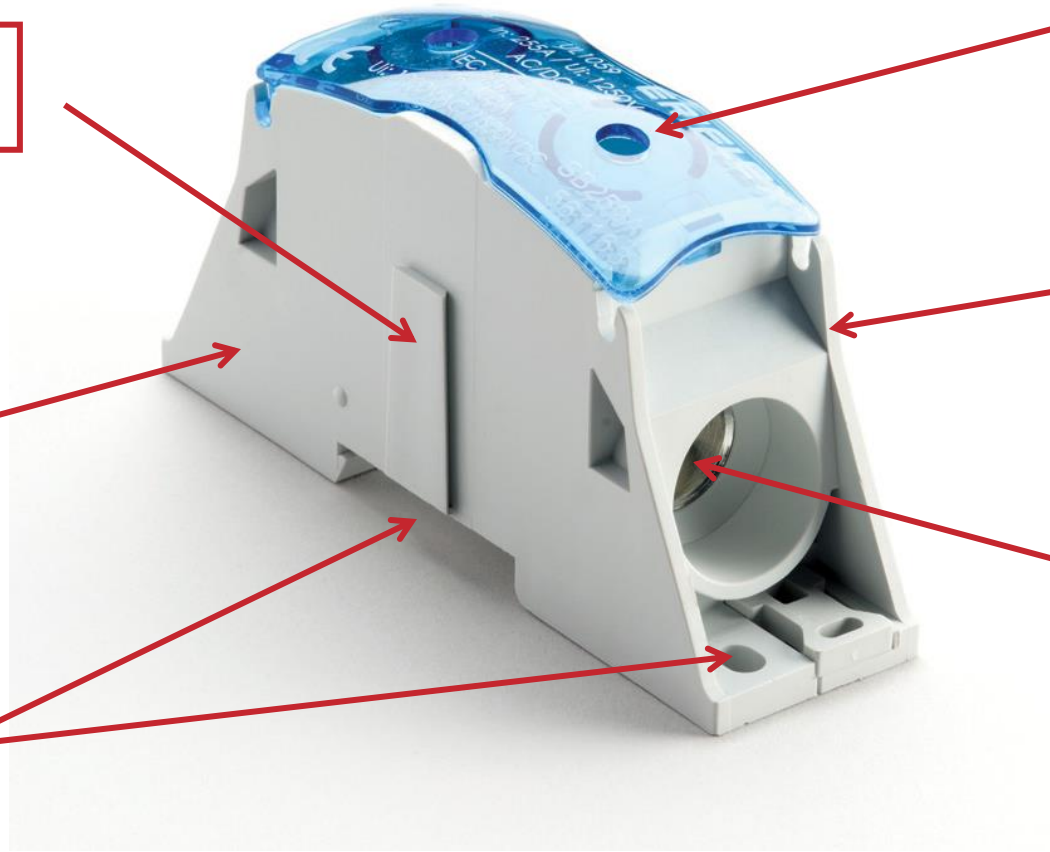
IP 20
Finger Safe

Short Circuit Current Rated
Ipk up to 105 kA (IEC)

UL94V-0 Flammability Rating
Halogen- free
RoHS Compliant

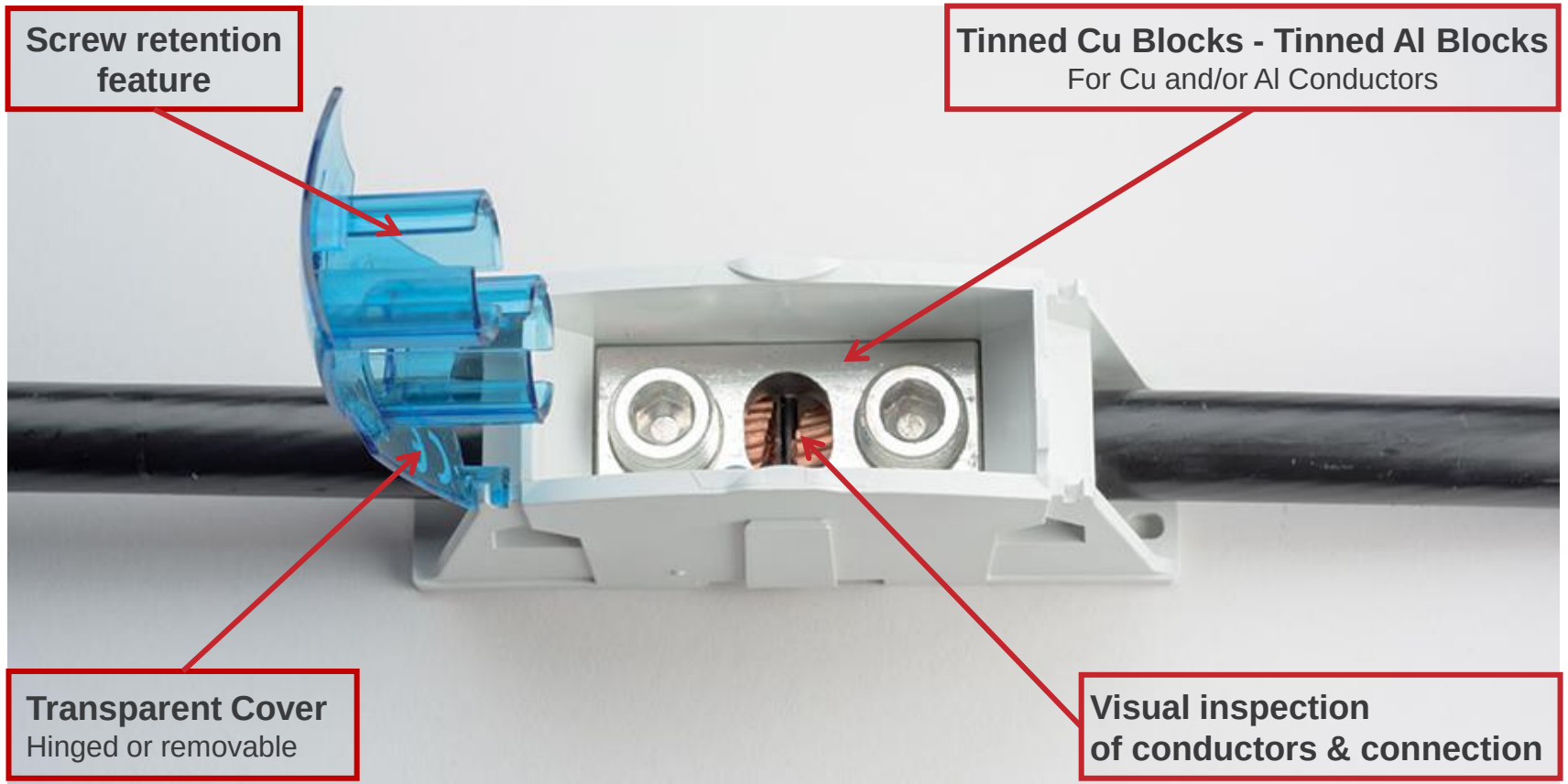
>95% fill ratio

Easy and strong fixing
DIN rail (2-position clip) or panel mount with screws



Example of products tested according to AS/NZ 60947-7-1

- **Features:**



Example of products tested according to AS/NZ 60947-7-1

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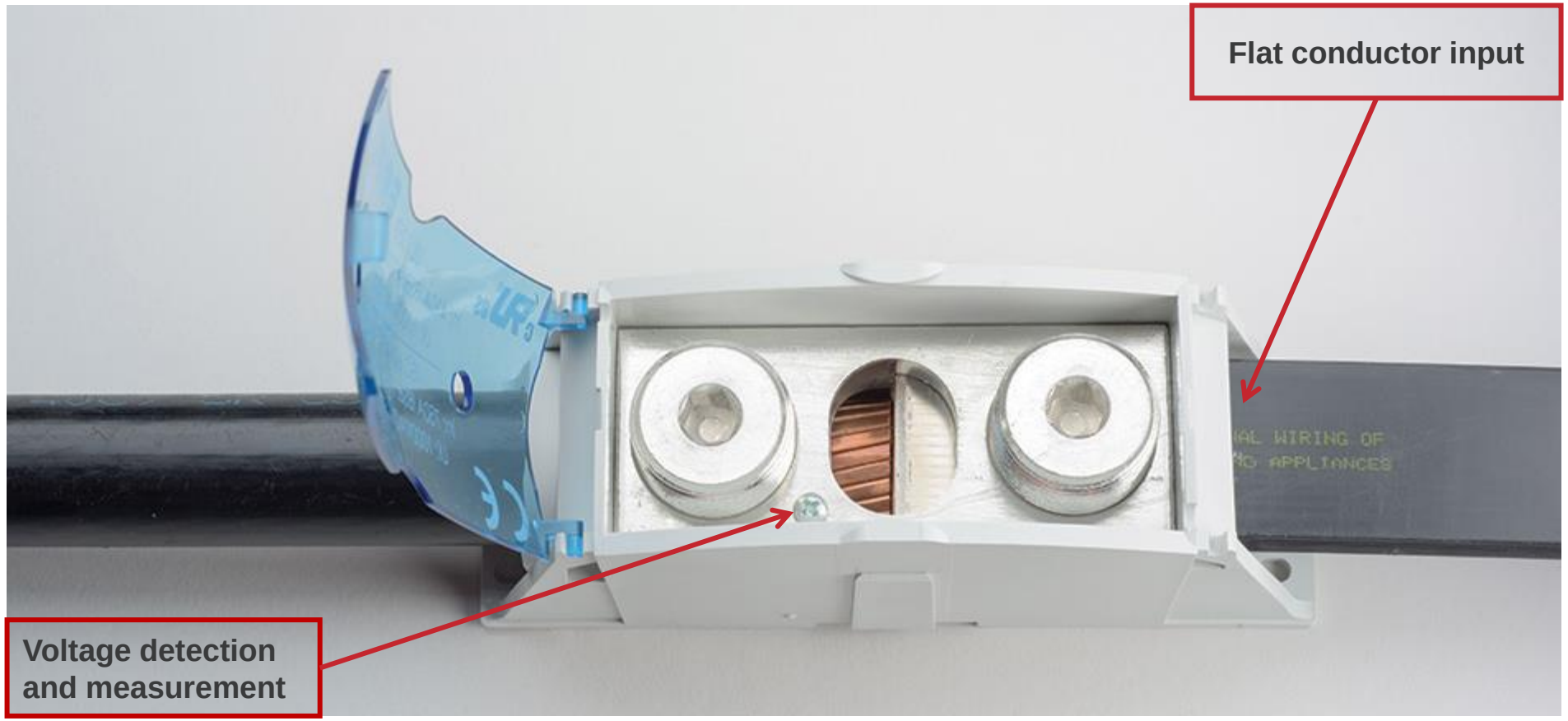


Example of products tested according to AS/NZ 60947-7-1

➢ Range overview

Historical product range (10 Tinned Cu blocks and 10 Tinned Al blocks)

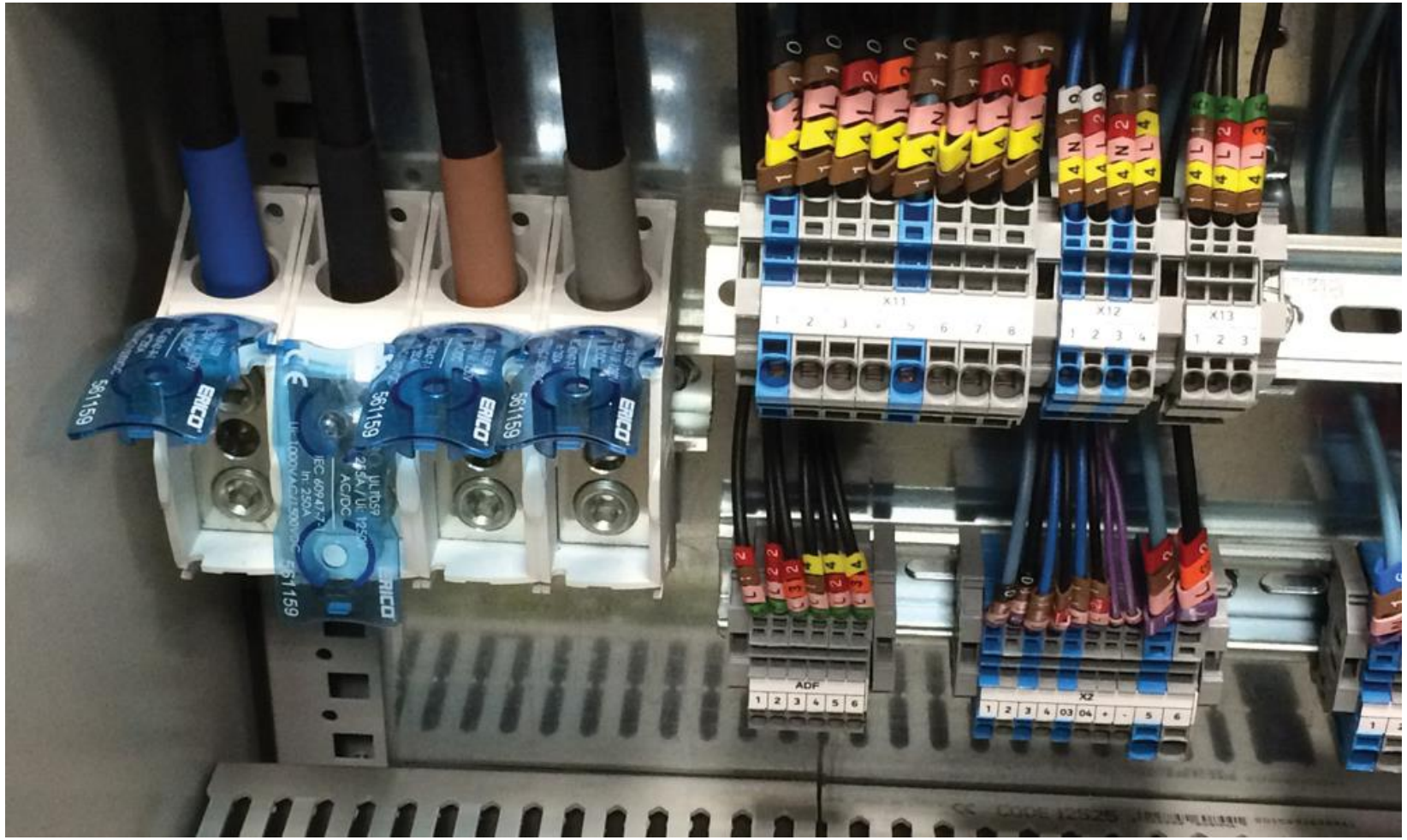
Recent product range extension (8 blocks - End 2018)

	Curent Rating Application						
Block Function	80 A	125 A	160 A	250 A	400 A	630 A	>=1000 A
Cable to Cable	SB80 SB80AL	SB125 SB125AL	SB160 SB160AL	SB250 SB250AL	SB400 SB400AL	SB630 SB630AL	
Cable to 2 Cables				SB2C250	SB2C400 SB2C400AL		SB2C1000AL
2 Cables to 2 Cables							SB2C2C1000AL
Cable to 3 Cables							
Flat Cond.* to Cable				SBF250	SBF400 SBF400AL	SBF630 SBF630AL	
Flat Cond.* to 2 Cables				SBF2C250	SBF2C400 SBF2C400AL	SBF2C630AL	
FLEXIBAR Adv. to 3 Cables							SBF3C1000AL
FLEXIBAR Adv. to 4 Cables							SBF4C1600AL

* note : Flat Cond. can be either FLEXIBAR Advanced or IBSB Advanced.

Example of products tested according to AS/NZ 60947-7-1

- **Application photos**



Example of products tested according to AS/NZ 60947-7-1

- **Application photos**

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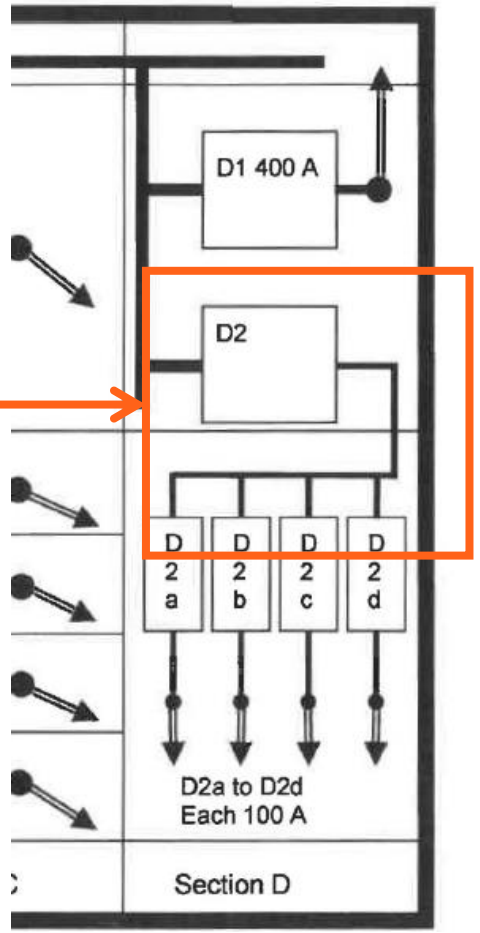
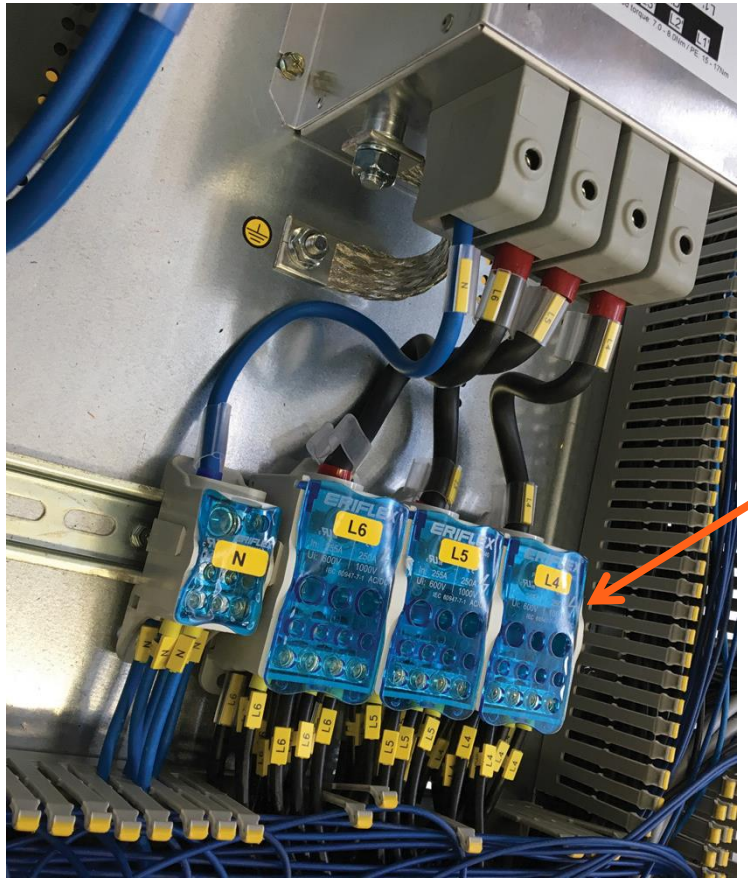
- Can nVent ERIFLEX power blocks ease compliance to IEC 61439-1?
- Point A: ampacity and short circuit ✓
- Point B: AL/CU compatibility and corrosion resistance ✓
- Point C: conductor stress reduction ✓
- Point D: Ease of maintenance and ease of field installation ✓

Conclusion

- The same reasoning can be extended to power distribution inside the AS/NZ 61439-1 compliant assembly by using distribution blocks tested to AS/NZ 60947-7-1.

Distribution





nVent ERIFLEX
Distribution Blocks

Resources

- nVent ERIFLEX SB blocks webpage (incl. 2D/3D models): https://www.erico.com/category.asp?category=R3548
- nVent ERIFLEX UD blocks webpage (incl. 2D/3D models): https://www.erico.com/category.asp?category=R3500
- nVent ERIFLEX Power and Distribution Blocks catalogue: https://www.erico.com/catalog/literature/P1215C-UKEN.pdf

ANY FURTHER QUESTIONS:

- Please ask your local COLTERLEC representative

- Chris Holst (Christopher.holst@nvent.com)

Thank you