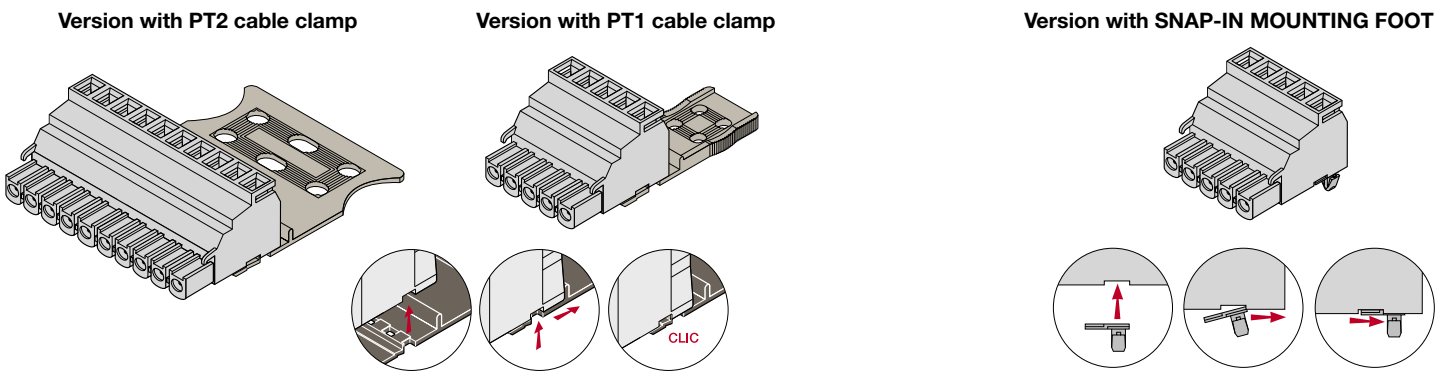


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Accessories

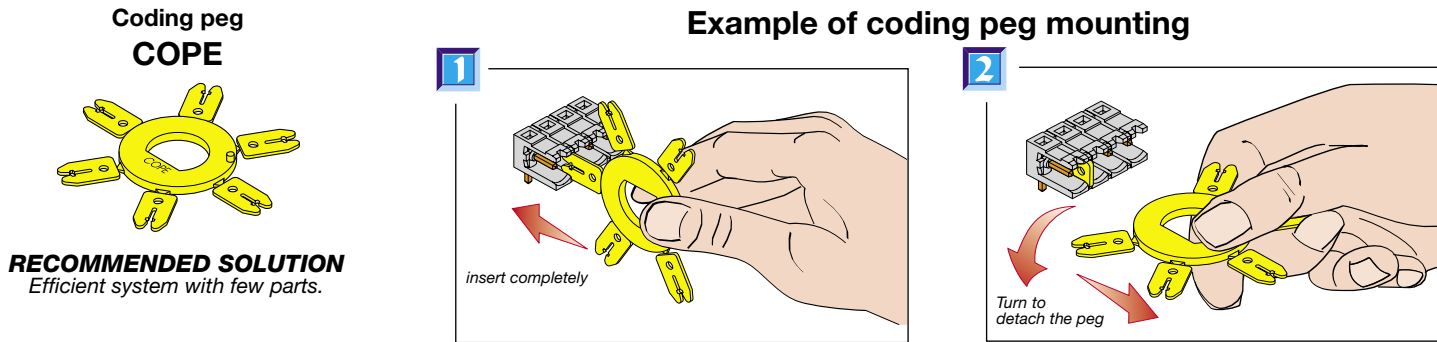
Accessories for A.D.O. Connectors



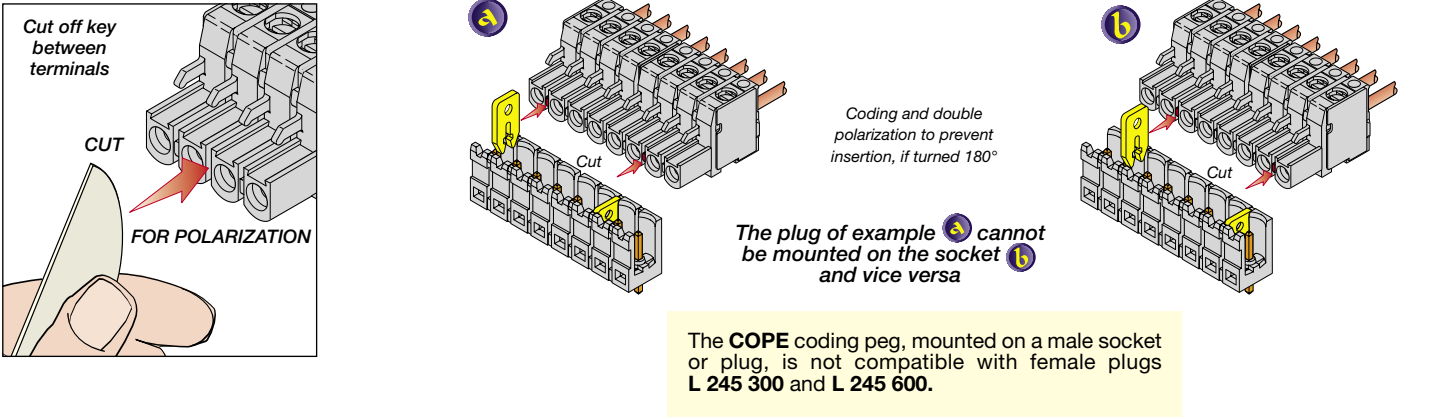
Accessories

Description		Type	Order code	Spacing	Packaging	Weight kg
Cable clamp plug	3 to 7 poles	grey	PT1	1SSA 299 226 R0100	5.08 mm	50 0.0012
Cable clamp plug	8 to 16 poles	grey	PT2	1SSA 299 227 R0100	5.08 mm	50 0.0033
Cable clamp plug	3 poles	black	PT1	1SSS 299 253 R2200	7.62 mm	20 0.0016
Cable clamp plug	8 poles	black	PT2	1SSS 299 254 R2200	7.62 mm	20 0.0018
Snap-in mounting foot		grey		1SSA 299 257 R0000		20 0.0001

Coding accessories



Coding examples

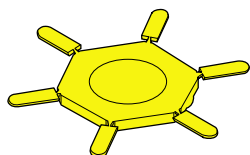


Accessories

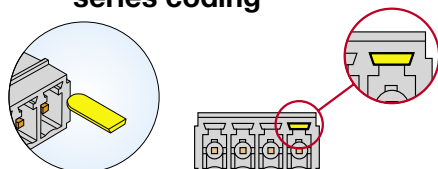
Description		Type	Order code	Packaging	Weight kg
Coding peg	yellow	COPE	1SNA 199 322 R2200	10	0.0010

Accessories

Coding peg 1SSA 299 084 R0600

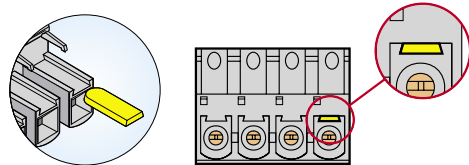


L 252 and L 253 series coding



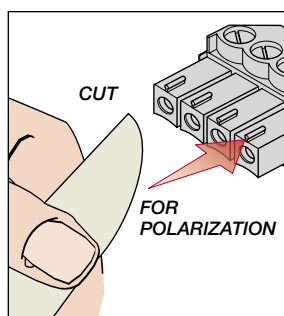
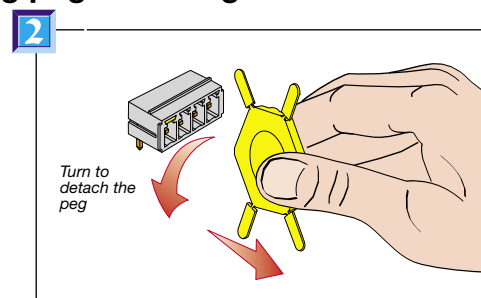
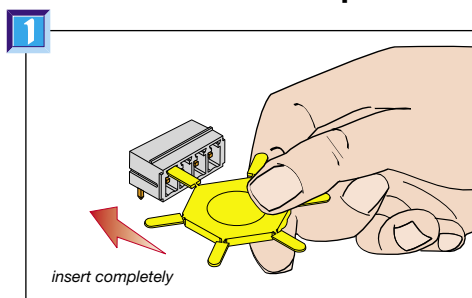
Attention to the correct position of the coding peg while inserting.

Female plugs coding

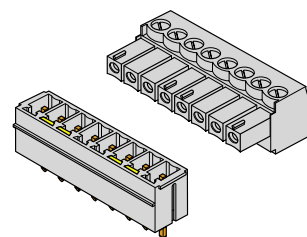


Attention to the correct position of the coding peg while inserting.

Example of coding peg mounting



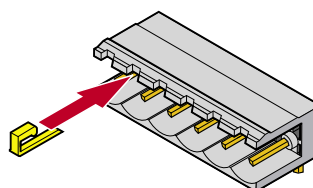
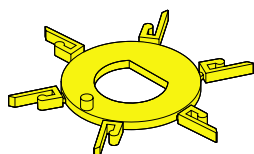
Coding example



Accessories

Description	Type	Order code	Packaging	Weight kg
Coding peg	yellow ■ COCF	1SNA 199 320 R0400	10	0.0010
Coding peg	yellow ■	1SSA 299 084 R0600	50	0.0005

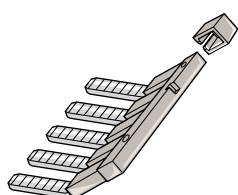
Coding peg 1SSA 299 085 R0600



Accessories

Description	Type	Order code	Packaging	Weight kg
Coding peg	yellow ■ COCE	1SNA 199 321 R0100	10	0.0010
Coding peg	yellow ■	1SSA 299 085 R0600	50	0.0005

Comb-type jumper bar



This accessory can be used only on the terminal blocks with at least one compression clamp connection. It permits the electrical connection of 2 to 10 blocks. Interconnection of non-consecutive blocks is possible by removing the teeth in front of the block which are not connected.

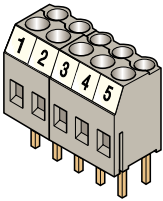
The comb-type jumper bars can be cut using pliers (or a saw). In this case the use of an insulating tip EIP is recommended where possible. The comb is placed in the compression clamp before tightening the screws, above the conductor.

Accessories

Description	Type	Order code	Current	Packaging	Weight kg
Insulating tip for comb	EIP	1SNA 113 550 R2400			
Comb-type jumper bar	2 poles PC5	1SNA 113 542 R1000	30 A		
Comb-type jumper bar	10 poles PC5	1SNA 113 544 R1200	30 A		

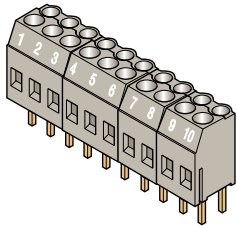
Marking

RBA Sticker marking



Card of 240 markers - Dimension 5 mm
Each strip is pre-cut to make tearing-off easy.
Material : **Polyester**.
Special marking on request, consult us.

Custom printing on the product on request, consult us.



Description	Spacing	Type	Order code	Width	Packaging	Weight kg
Blank	5.08 mm	RB3A	1SNA 178 639 R1200	3 mm		
Blank	5.08 mm	RB5A	1SNA 178 623 R0200	5 mm		

Description	Spacing	Type	Order code	Width	Packaging	Weight kg
Preprinted 30 x 1 à 8	5.08 mm	RB3A	1SNA 178 636 R0700	3 mm		
Preprinted 20 x 1 à 12	5.08 mm	RB3A	1SNA 178 632 R0300	3 mm		
Preprinted 10 x 1 à 24	5.08 mm	RB3A	1SNA 178 630 R1500	3 mm		
Preprinted 10 x 25 à 48	5.08 mm	RB3A	1SNA 178 631 R0200	3 mm		

Preprinted 20 x 1 à 12	5 mm	RB5A	1SNA 178 626 R0500	5 mm		
Preprinted 10 x 1 à 24	5 mm	RB5A	1SNA 178 624 R0300	5 mm		
Preprinted 10 x 25 à 48	5 mm	RB5A	1SNA 178 625 R0400	5 mm		

Preprinted 30 x 1 à 8	5.08 mm	RB5A	1SNA 178 620 R1300	5 mm		
Preprinted 20 x 1 à 12	5.08 mm	RB5A	1SNA 178 629 R1000	5 mm		
Preprinted 10 x 1 à 24	5.08 mm	RB5A	1SNA 178 627 R0600	5 mm		
Preprinted 10 x 25 à 48	5.08 mm	RB5A	1SNA 178 628 R1700	5 mm		

Description	Spacing	Type	Order code	Width	Packaging	Weight kg
Preprinted 2 x 1 à 24	5 mm	RB5A	1SNA 179 652 R1000	5 mm		
Preprinted 2 x 25 à 48	5 mm	RB5A		5 mm		
Preprinted 2 x 49 à 72	5 mm	RB5A		5 mm		
Preprinted 2 x 73 à 96	5 mm	RB5A		5 mm		
Preprinted 2 x 97 à 120	5 mm	RB5A		5 mm		

Preprinted 2 x 1 à 24	5.08 mm	RB5A	1SNA 179 651 R1700	5 mm		
Preprinted 2 x 25 à 48	5.08 mm	RB5A		5 mm		
Preprinted 2 x 49 à 72	5.08 mm	RB5A		5 mm		
Preprinted 2 x 73 à 96	5.08 mm	RB5A		5 mm		
Preprinted 2 x 97 à 120	5.08 mm	RB5A		5 mm		

Preprinted - odd and even						
3 x 1, 3, 5 à 47	5.08 mm	RB5A	1SNA 179 653 R1100	5 mm		
3 x 2, 4, 6 à 48	5.08 mm	RB5A		5 mm		
2 x 49, 51, 53 à 93	5.08 mm	RB5A		5 mm		
2 x 50, 52, 54 à 96	5.08 mm	RB5A		5 mm		

RB Strip marking

Strip of 12 markers.

Description	Spacing	Type	Order code	Width	Packaging	Weight kg
Blank	5.08 mm	RB-12 W	1SNA 299 402 R0000	3.6 mm		
Blank	5 mm	RB5-12 W5	1SNA 299 488 R0600	3.6 mm		

Rated characteristics of P.C.B. terminal blocks and connectors

Rated operational voltage U_e (according to § 4.3.1.1. IEC 60947-1)

"A rated operational voltage of an equipment is a value of voltage which, combined with a rated operational current, determines the application of the equipment and to which the relevant tests and the utilization categories are referred." The rated operational voltage for **lmi**® products is equal to the rated insulation voltage.

Rated insulation voltage U_i (according to § 4.3.1.2. IEC 60947-1)

"The rated insulation voltage of an equipment is the value of voltage to which dielectric tests and creepage distances are referred." To ensure an optimal rated insulation voltage, the creepage distances of **lmi**® terminal blocks and connectors are calculated according to the prescriptions of IEC 60664 and IEC 60947-1 § 7.2.3 standards. Tests are carried out according to IEC 60947-1 § 8.3.3.4.

Rated impulse withstand voltage U_{imp} (according to § 4.3.1.3. IEC 60947-1)

"The peak value of an impulse voltage of prescribed form and polarity which the equipment is capable of withstanding without failure under specified conditions of test and to which the values of the clearances are referred".

Clearances of **lmi**® terminal blocks and connectors are designed in accordance with the prescriptions of IEC 60664 and 60947-1 § 7.2.3. , and tested according to IEC 60947-1 § 8.3.3.4.

Rated operational current I_e (according to § 4.3.2.3. IEC 60947-1)

"A rated operational current of an equipment is stated by the manufacturer and takes into account the rated operational voltage, the rated frequency, the rated duty, the utilization category and the type of protective enclosure, if appropriate".

lmi® terminal blocks and connectors are designed for a temperature rise as per the requirements of IEC 60947-7-1 § 7.2.1, when used at the rated operational current.

Rated cross-section (according to § 4.3.4. IEC 60947-7-1)

"The rated cross-section of a terminal block is a value of connectable conductor cross-section, stated by the manufacturer, and to which certain thermal, mechanical and electrical requirements are referred".

Rated cross-sections of **lmi**® terminal blocks and connectors are tested according to IEC 60947-1 § 8.2.4.5.

Rated connecting capacity (according to § 4.3.5. IEC 60947-7-1)

"The rated connecting capacity of a terminal block is the range and/or number of rated cross-sections for which the terminal block is designed".

The connecting capacities of **lmi**® terminal blocks and connectors are optimized for their field of applications.

Environmental conditions : pollution degree (according to § 6.1.3.2. IEC 60947-1)

The § 6.1.3.2 of IEC 60947-1 defines 4 pollution degrees :

Pollution degree 1 :
no pollution or only dry, non-conductive pollution exists ;

Pollution degree 2 :
Normally, only non-conductive pollution exists. Occasionally, however, a temporary conductivity caused by condensation may be expected ;

Pollution degree 3 :
conductive pollution exists, or dry, non-conductive pollution exists which becomes conductive due to condensation ;

Pollution degree 4 :
the pollution generates persistent conductivity caused, for instance, by conductive dust or by rain or snow."

lmi® terminal blocks and connectors are designed for a pollution degree 3, according to IEC 60947-1 standard (clearances and creepage distances refer to the pollution degree).

Materials

I. Insulating materials

ABB was a precursor in using thermo-plastic materials for products moulding. This development permitted to realize more complex shapes for terminal blocks, suitable for more and more demanding markets. Then, polyamide is at the present time one of the most used plastic materials, and it is recognized by all competent organisms

ABB is using polyamides without halogens, cadmium, phosphorus or asbestos. This modern insulating material shows a semi-crystal molecular structure, which guarantees good electrical and mechanical characteristics, flexibility and resistance to shocks. Its resistance to micro-organisms, bacteria, enzymes, fungus and termites is very good. Indeed, polyamide materials are not a nutritional environment for biological organisms. Their good resistance to ageing and their insensitivity to ultraviolet rays mean a good resistance to the hardest climatic conditions.

Fire resistance : the various polyamides that we use for our terminal blocks answer to the most severe requirements of the market (transportation, chemistry/petro-chemistry, energy). Indeed, for numerous applications, in particular railway transportation, the plastic material should not have any dangerous characteristic (combustion maintaining, toxic fumes...) for users and equipment.

Another plastic material used for P.C.B. blocks and connectors is polycarbonate. This one is rigid and has a good resistance to heat. Furthermore, it offers a good dimensional stability and absorb a very few quantity of water.

Some standards are famous in this area and define the test criteria of these plastic materials, regarding their resistance to fire/fume :

1) UL94 standard : this American standard is widely used in the world. It defines the resistance to fire, by defining several levels of resistance (from the less demanding to the most demanding) :

- | | |
|-------------------|-------|
| a) not classified | |
| b) HB | d) V1 |
| c) V2 | e) V0 |

Note that whatever their classification may be (V0 to HB), plastic materials are considered as self-extinguishing, that is to say that they do not maintain fire.

Our terminal blocks are polyamide moulded, only in V0.

2) French standards : NF F 16-101 (1988) and NF F 16-102 (1992) Railway rolling stock - Behaviour against fire.

These standards relate all products designed for rolling stock applications. They define the instructions regarding selection of materials towards their behaviour against fire (reaction to fire, opacity of fumes and toxicity of gas emanations).

The material classification of A.D.O. connectors for railway applications is : **I2F2**.

II. Metallic parts

The materials used by ABB are designed, manufactured and coated with the most modern techniques.

● Screw-clamp blocks :

- Wire-clamp and screw : they are made of chromium passivated steel III, in order to meet industrial requirements. This coating is suitable for normal industrial environment, tempered sea climate, hot wet climate.
- Conducting parts : for these parts, we use conducting materials such as copper or brass, characterized by a high conductivity as well as good mechanical characteristics. These pieces are tin coated, to guarantee a good contact and a good resistance to corrosion. Indeed, this malleable tin coating wraps around the copper wire and then ensures a gas-tight connection. This limits introduction of polluting elements (dust, corrosive atmosphere...) through the connections.

● A.D.O. blocks :

A.D.O. clamp : A.D.O. is one of the most performant technology as for vibration and corrosion resistance. For this purpose, ABB has carefully selected materials which can meet the extremely strict requirements that A.D.O. can face. The clamp is made of copper alloy joining

conductivity and mechanical tightness which allows to combine electrical and mechanical functions.

III. Conductors

Our terminal blocks are designed to be connected with flexible or solid wires (copper core without any special coating).

Note : tin, copper or nickel coated aluminium wires require no preparation.