Comparative table of connection types accepted by the different terminal styles

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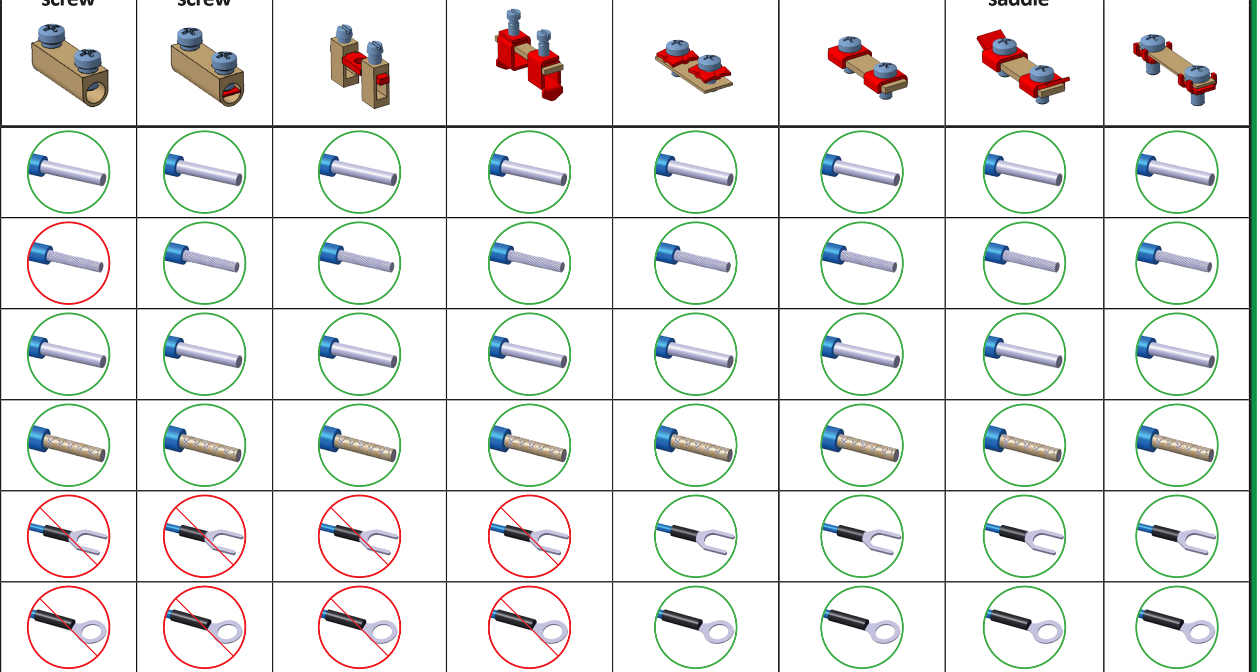
P 1/2

Ceramic was the first insulating material used in the electrical connection terminals. Mechanically resistant, exceptionally fire resistant, excellent electrical insulator, it had all the qualifications. Produced from locally available raw materials, ceramic and porcelain glazed electro-technical parts were essential in the beginnings of electricity until the appearance of Bakelite in the 1930s, then of engineered thermoplastics to 1960.
Although using inexpensive raw materials, the production process makes it more expensive than plastic moldings.
However, even nowadays, no plastic material has its mechanical, electrical and thermal strengths.
Therefore, in all standards of components and electrical products, ceramic occupies a place apart, and is considered the safest insulating solution. In many applications it is still essential and unrivaled.
In recent years, the international electrical standards have significantly tightened requirements regarding resistance to fire and to tracking of plastics used in the connection terminals, making ceramics more attractive again.
Ultimheat produces its own ceramic parts and engineered plastic connection terminals. This technological knowledge of different production methods allows to choose the most appropriate solution in regards to physical constraints and current regulations of each application.
In ceramic connection blocks, the maximum admissible electrical rating is limited by IEC60998-1, which states that the self-heating of a terminal due to current flowing through it should not exceed 45°C above the ambient temperature.
The maximum permissible electrical terminal temperature, when current flows depends on its raw material (nickel plated brass or stainless steel).
It is therefore necessary, depending on the usual high ambient temperature on ceramic connection blocks, to moderate the maximum electrical rating given by the standard IEC60998-1.
To standardize the different existing standards defining sections of electrical conductors that have coexisted for decades, such as AWG,(also called Brown and Sharp), Birmingham, SWG (British Imperial Standard), Washburn & Moen..., the international IEC60228 standard has defined the following cable sections: 0 .5 mm2, 0.75 mm2, 1 mm2, 1.5 mm2, 2.5 mm2, 4 mm2, 6 mm2, 10 mm2, 16 mm2, etc. .., up to 1000mm ².
Terminal blocks in this catalog therefore refer to these values.

Comparative table of the types of cable termination accepted by the different types of screw terminals

Terminal style	Direct pressure screw	Indirect pressure screw	Plain cage terminals	Self locking cage teminal	Ribbed square washer*	Saddle*	Saddle with anti-shearing saddle*	Fork saddle*
Rigid plain wire								
Stranded wire								
Tin plated wire end								
Cable shoe								
Fork terminal								
Ring terminal								
Advantages	Cheap. Good tightening on rigid conductors	Cheap. Good tightening on rigid and stranded flexible conductors	Small width footprint, as there is no screw inside the wires cavity	Small width footprint, as there is no screw inside the wires cavity. Excellent resistance to vibration and thermal cycling	Allows the use of all cable termination ends. Good visualization of the insertion of the conductors. The ribs gives good resistance to tearing	Allows the use of all cable termination ends. Good visualization of the insertion of the conductors. Poor resistance to tearing	Allows the use of all cable termination ends. Good visualization of the insertion of the conductors. Poor resistance to tearing. Saddle tab avoid conductor shearing	Allows the introduction of conductors by three different sides. Allows the use of all cable termination ends. Good visualization of the insertion of the conductors. Good resistance to tearing
Disadvantages	Poor tightening on flexible conductors. Strands must be twisted to consolidate the end	Introduction of stranded conductors hampered by the pressure plate	Significant risk of poor clamping by wrong introduction of the conductors between the pressure plate and screw. Poor resistance to thermal cycling and vibration. Does not allow all types of cable termination	Significant risk of poor clamping by wrong introduction of the conductors between the pressure plate and screw. Does not allow all types of cable termination	Big width because of the central screw. Risk of wrong tightening of two conductors with big difference in diameter	Very big width because of the central screw and saddle edges. Risk of wrong tightening of two conductors with big difference in diameter. Risk of conductor shearing by the edge of the saddle	Very big width because of the central screw and saddle edges. Risk of wrong tightening of two conductors with big difference in diameter	Very big width because of the central screw and saddle edges. Risk of wrong tightening of two conductors with big difference in diameter



* For all these applications, a better resistance to vibration and loosening due to thermal cycles is obtained by interposing a spring washer between the screw head and the saddle

AWG diameters and sections in mm²

AWG	Diameter (mm)	Section (mm²)	AWG	Diameter (mm)	Section (mm²)	AWG	Diameter (mm)	Section (mm²)
24	0.510	0.205	**17**	1.15	1.04	**10**	2.59	5.26
23	0.575	0.259	**16**	1.29	1.31	**9**	2.9	6.63
22	0.643	0.324	**15**	1.45	1.65	**8**	3.25	8.37
21	0.724	0.411	**14**	1.63	2.08	**7**	3.65	10.55
20	0.813	0.519	**13**	1.83	2.63	**6**	4.1	13.30
19	0.912	0.653	**12**	2.05	3.31	**5**	4.65	16.77
18	1.02	0.823	**11**	2.3	4.17	**4**	5.2	21.15

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Comparative table of connection types accepted by the different terminal styles
P 2/2

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AWG diameters and sections in mm²

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