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# “SMART CONNECTOR” System



## System description

The "SMART CONNECTOR" systems (series 9910) are made by coupling one connector (series 9152), equipped with an electronic circuit integrated in the connector, with one specific coil (series 9300), dedicated to the connector itself.

These systems have been designed by Castel to be installed on:

- solenoid valves normally closed series: 1024, 1028, 1034, 1038, 1040, 1048, 1050, 1058, 1059, 1064, 1068, 1070, 1078, 1079, 1090, 1098, 1099
- expansion valves PWM Series: 2028

and allow:

- a reduction in energy consumption in steady operation
- a consequent reduction of working temperature
- an extension of the life of the coil
- an increase in the value of MOPD

## Junction boxes description

The junction boxes 9152, EN 175301-803 standardized (ex DIN 43650), represent an effective system for the connection of the coil to the supply circuit, thus ensuring safety also in the presence of moisture.

The junction boxes 9152 are available either in direct current version (voltage 12VDC and 24VDC) or in alternate current version (voltage 24VAC, 220 / 240VAC).

DC versions are equipped with protection against reverse polarity. AC versions are equipped with integrated bridge rectifier circuit on the circuit. All versions, both in direct current and in alternating current, are fitted with a diode device that ensures protection from over-voltages.

All versions report the operating voltage and the wiring diagram printed on the housing.

The cable entry of the external housing is adapted to receive cables of outer diameter 6 to 9 mm and is equipped with clamping nut. It is recommended to use a three-core cable with wires of at least 0.75 mm<sup>2</sup>. There aren't versions with cable co-printed.

All the junction boxes series 9152 are manufactured according to Electromagnetic Compatibility (EMC)

Directive 2004/108/EC. The junction boxes series 9152 at 220/240 VAC supply are manufactured according to Low Voltage (LV) Directive 2006/95/EC.

The junction boxes series 9152 must be solely used with the type of coil which is coupled into the system "SMART CONNECTOR". The correct coupling between the junction box and the coil is clearly indicated in the table of this brochure. The wrong use of the junction box 9152 with all the other types of Castel coils leads to the rapid damage to the coil and the junction box itself.

## Coils description

The coils series HF2 (9300), used in the "SMART CONNECTOR" systems, are special ones available either in direct current version (voltage 12VDC and 24VDC) or in rectified current version (voltage 24VRAC, 220VRAC, 240VRAC).

These coils are H class in compliance with IEC 85 standard and their construction is in compliance with EN 60730-1 and EN 60730-2-8 standards. The windings are made with copper wire, insulation class H 180 °C, in compliance with IEC 85 standard. Terminals of coils consist of two line terminals plus one ground terminal. The outer casing is provided with dielectric and waterproof resins that assure a reinforced insulation making the coils suitable for all assemblies.

Protection against electric contacts is class I for all the coils. Therefore, for safety purposes, coils must be effectively connected to a ground system. Rubber gasket on the lower end of coil ensures moisture protection of winding. The protection degree of these coils, joined to connectors 9152, is IP65 according to EN 60529.

The coils are designed for continuous use. The solid construction of these coils is suitable for heavy-duty applications in refrigerant systems. The maximum ambient temperature for all coils is 50 °C.

All the coils listed in this brochure are manufactured according to Electromagnetic Compatibility (EMC)



Directive 2004/108/EC. The coils with 220 VRAC and 240 VRAC supply are manufactured according to Low Voltage (LV) Directive 2006/95/EC.

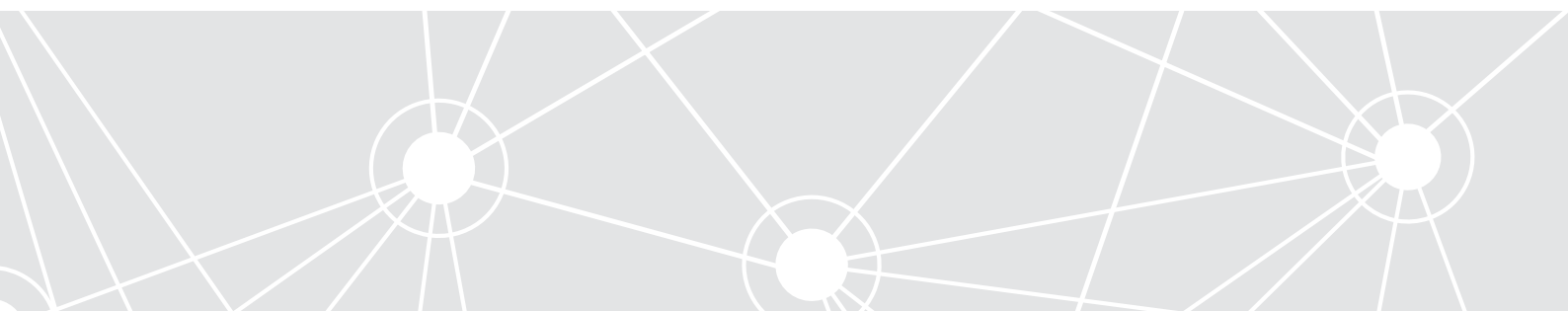
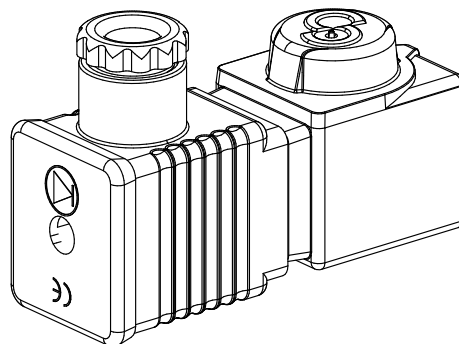
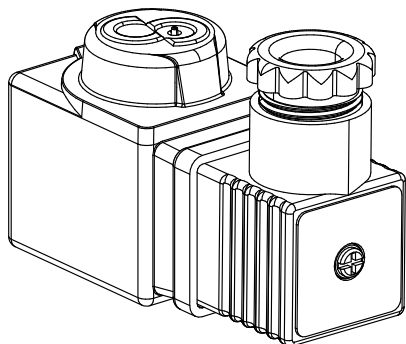
## Operation

The connectors 9152, by means of the electronic circuit integrated in the same connector, boost coil 9300 to the maximum power permitted for a short predetermined time ("boost" phase), thus generating an attraction force greater on the magnetic group of the valve with which increases the value of MOPD. After the aforementioned "boost" phase, the

connectors 9152 during normal operation, retain the electrical consumption of the coil 9300 to a predetermined value between 45% and 65%, feeding it with a pulsating current with cycles of ON / OFF and a frequency comprised between 15 and 30 KHz. In this way it is possible to have a reduction of energy consumption, a reduction of the working temperature and, in conclusion, a lesser wear of the electromechanical system.

The following table shows the coding of "SMART CONNECTOR" systems, which shows the coupling between the connectors and the respective coils.

Catalogue No SMART CONNECTOR System	Voltage [V]	Voltage Tolerance [%]	Frequency [Hz]	T boost [msec]	Working Nominal Power [W]	Nominal Power Tolerance [%]	Boost Nominal Power [W]
9910/RD1	12 VDC	+/-10	-	130	3	+/-10	50
9910/RD2	24 VDC	+/-10	-	130	5	+/-10	50
9910/RA2	24 VAC	+/-10	50/60	200	7	+/-10	50
9910/RA6	220 VAC	+/-10	50/60	200	7	+/-10	50
9910/RA7	240 VAC	+/-10	50/60	200	7	+/-10	50





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Castel has always been aware of environmental sustainability issues and gives its contribution to a cleaner environment, supplying the refrigeration and air conditioning industry with state-of-the-art and environment-friendly technology. With its commitment and steady research in its laboratories, Castel has developed a whole range of products using natural refrigerants, which reduce emissions to the minimum.



**ISO 14001**

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