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REP Connector Series

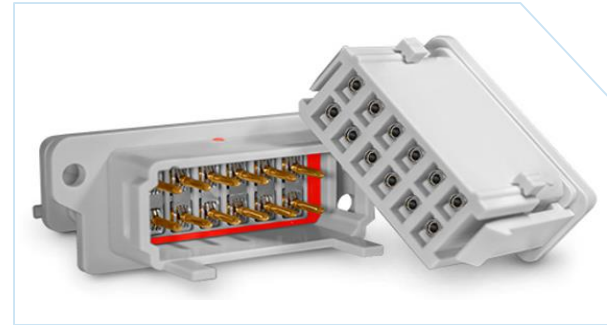
January 2018 | Smiths Interconnect



REP Connectors | Value Proposition

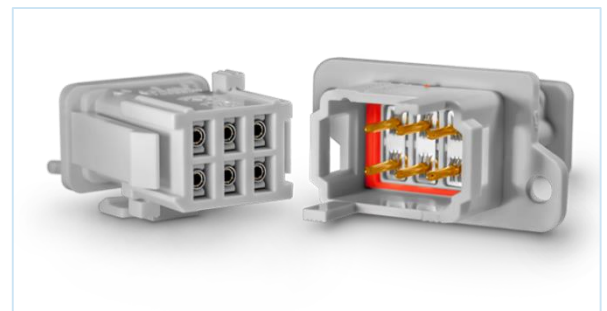
World Class Technology

- Hyperboloid contact technology ensures long life cycle and signal integrity thanks to the contact providing a high number of linear contact paths and resistance to shock and vibration
- Connectors meet the requirements of applications where sealing, reliability and easy cabling are key factors of competitiveness for customers



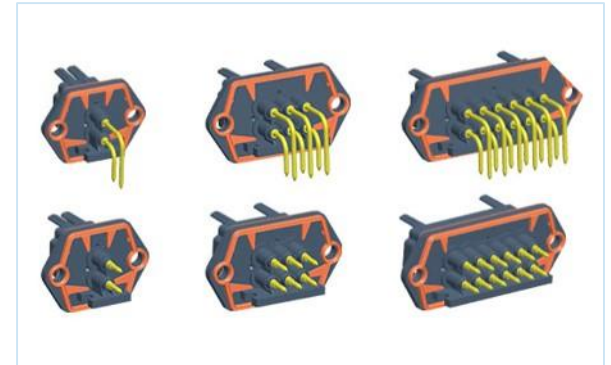
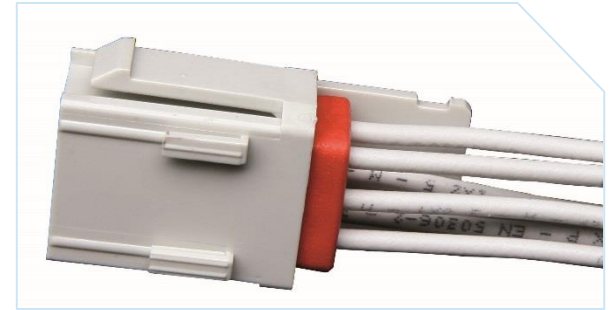
Optimized Design

- High standardization level with limited number of insert layouts and one contact size accepting large panels of cable wires and reducing the total cost of ownership
- Standard insulators: 2, 6 and 12 ways
- New shunt devices avoiding additional terminal blocs utilization
- Weight & space saving
- Keying devices embedded into the connector
- Coding devices included and several configurations: cable to cable, clips, front and back panel mount
- One unique contact for cross section cables from 0.5 to 2.5 mm² (24-12AWG) according to NFF 63-808 and EN 50-306 cable standards
- No specific tool required allowing for a reduction of supply chain, maintenance and cabling costs



Optimized Design (cont.)

- Two main versions:
 - Crimp termination contacts for cable harness applications, equipped with locking clips
 - Straight or bent termination contacts for PCB mount applications.
 - Polyamide material (black colour) temperature resistant for soldering process of PCB mount applications (acc. EN 45545)
 - Thermoplastic (grey colour) ensuring flexibility in cable to cable applications (acc. EN 45545)



Ease of Use

- Allows to be used everywhere in a train for control command equipment & cable harness as part of product standardization program.
- Can be delivered as a complete and tested pre-cabled solution according to customers' specification
- Rectangular shape gains surface and facilitates disconnection by the user
- Audible locking clip mechanism allowing for blind mating connection



Low contact resistance

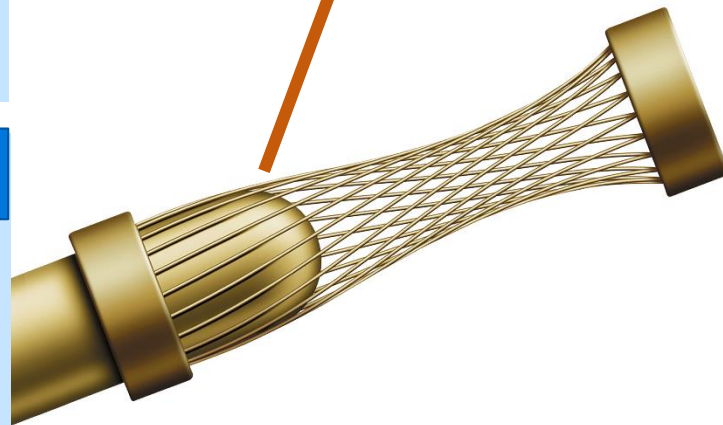
- Very low contact resistance
- 360 degree wiping action
- Higher current ratings for the same size contacts (30% more current carrying capacity)
- Overall space and weight savings

Shock & vibration proof

- Operates in extremely demanding environments
- Fit and forget ensuring failure free performance
- Immune to high mechanical shock and vibration

Low mating forces

- No fretting corrosion during life cycle
- Minimizing service requirements
- Reducing cost of ownership
- Extremely low insertion/ extraction forces



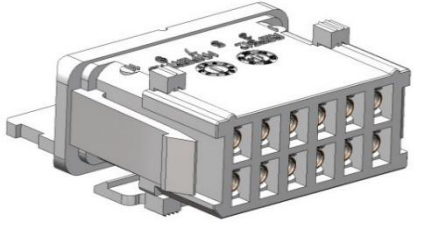
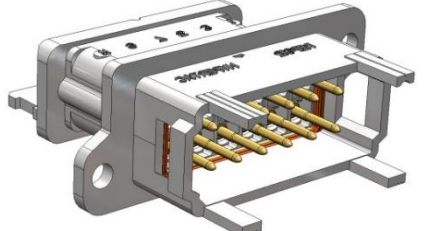
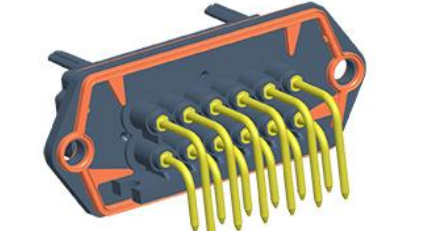

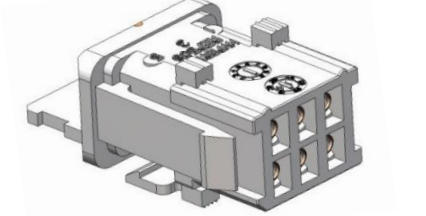
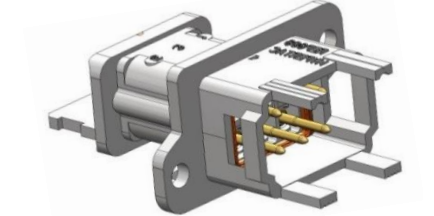



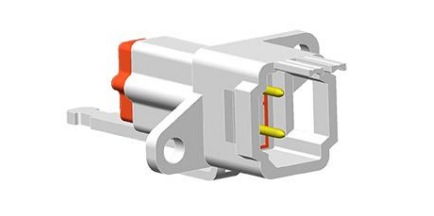


REP Connectors | Technical Characteristics

Mechanical	
Mating cycles:	500 cycles
Contact retention force:	>70 N
Clip locking retention force:	>190 N
Polarisation:	180° and 4 coding devices
Vibration:	Category 2 according to EN 61373 (bogie installation)

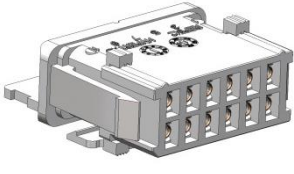
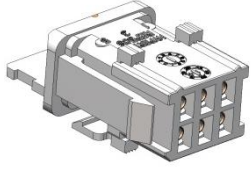
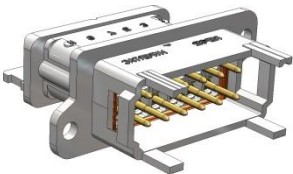
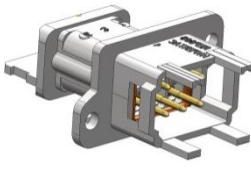
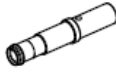


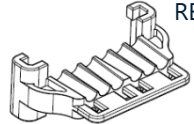
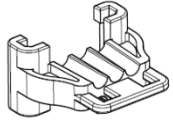
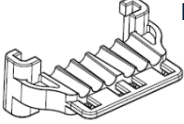
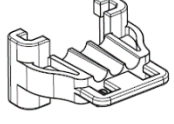
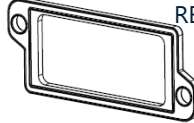
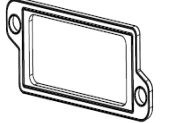
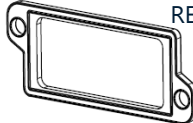
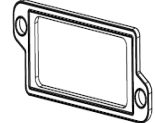
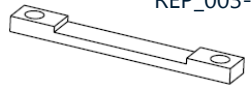
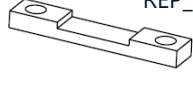

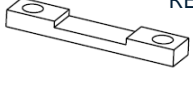
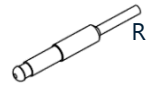
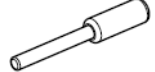
Electrical	
Voltage rating:	230V (EN-50124-1), pollution degree 3 or 400V with plastic dummy contacts between 2 contacts
Withstanding voltage:	2725V, EN-50124-1
Current rating:	18 A
Contact resistance:	≤ 2.5 mΩ
Insulation resistance:	≥ 5x10 ³ MΩ

Environmental	
Temperature range:	-55°C +125°C (up to 220°C for PCB version)
Sealing:	IP66, IP67
Salt spray:	96 hours (ASTM-B-117)
Flammability:	HL3 for R23 acc. to EN45545-2 F 16-101, NF F 16-102, EN ISO 11925-2, UNI CEI 11170-3 Auto-extinguish UL94 V0

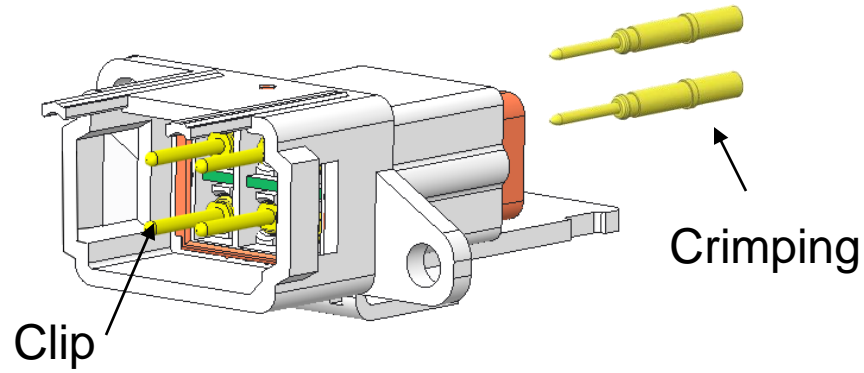
REP Connectors | Product Offering

			
<p>Female Plug Connector, Crimp Termination, 12 ways Type: REP 512</p>	<p>Male Receptacle Connector, Crimp Termination, 12 ways Type: REP 612</p>	<p>Male Receptacle Connector, Bent Termination, 12 ways Type: REP 412</p>	<p>Male Receptacle Connector, Straight Termination, 12 ways Type: REP 412</p>
			
<p>Female Plug Connector, Crimp Termination, 6 ways Type: REP 506</p>	<p>Male Receptacle Connector, Crimp Termination, 6 ways Type: REP 606</p>	<p>Male Receptacle Connector, Bent Termination, 6 ways Type: REP 406</p>	<p>Male Receptacle Connector, Straight Termination, 6 ways Type: REP 406</p>
			
<p>Female Plug Connector, Crimp Termination, 2 ways Type: REP 102</p>	<p>Male Receptacle Connector, Crimp Termination, 2 ways Type: REP 202</p>	<p>Male Receptacle Connector, Bent Termination, 2 ways Type: REP 402</p>	<p>Male Receptacle Connector, Straight Termination, 2 ways Type: REP 402</p>

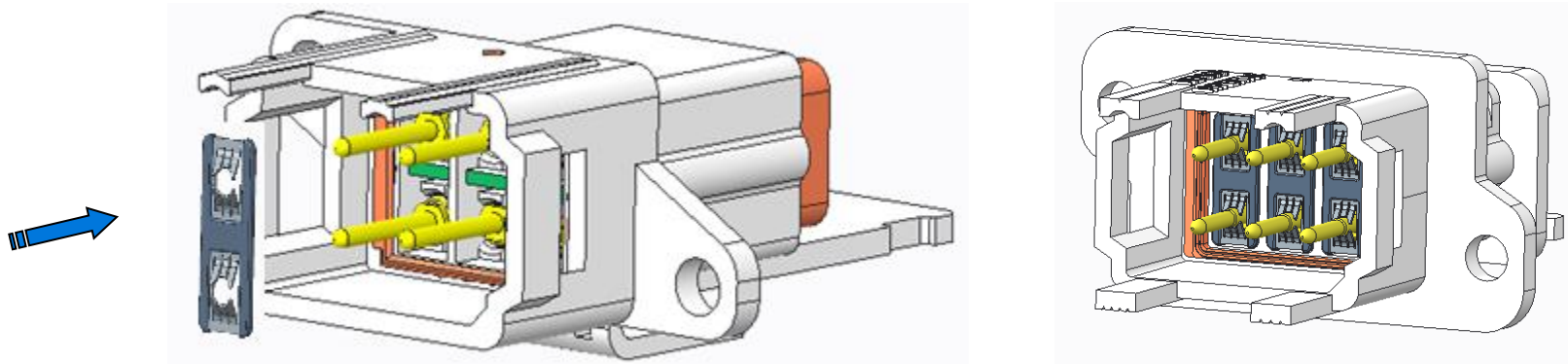
REP Connectors | Contacts & Accessories

Connector Range					
		Female Plug, 12 ways Product P/N: REP 512	Female Plug, 6 ways Product P/N: REP 506	Male Receptacle, 12 ways Product P/N: REP 612	Male Receptacle, 6 ways Product P/N: REP 606
Contacts	 0151832-20-N1		 0151081-20-1G		 REP_901
Accessories	For cable retainer  REP_007-12	 REP_007-06	 REP_007-12	 REP_007-06	
	Panel Seal  REP_006-12	 REP_006-06	 REP_006-12	 REP_006-06	
	Bracket for panel mounting  REP_003-12	 REP_003-06	 REP_003-12	 REP_003-06	
	Plastic dummy contact to use up to 400V  REP_002				
	Filler Plug  REP_001				

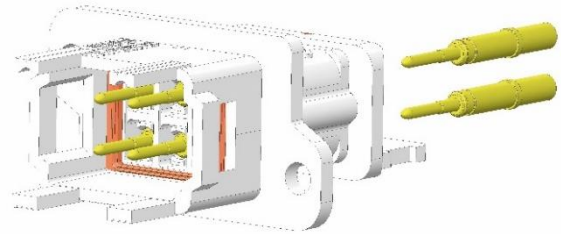
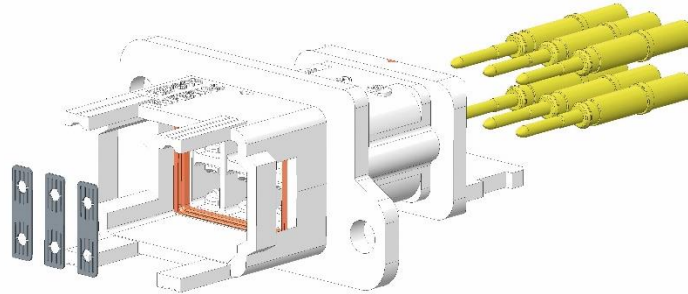
1) Cable and clip



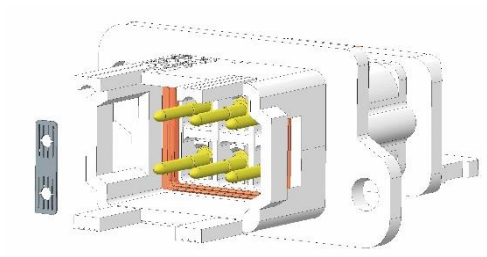
2) Shunt and final assembly



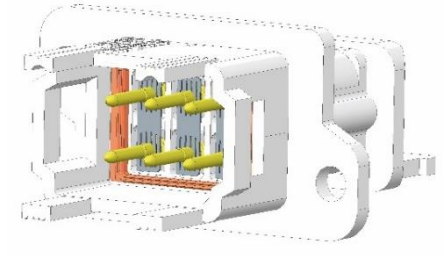
Contact & Shunt Assembly



1. Contact insertion



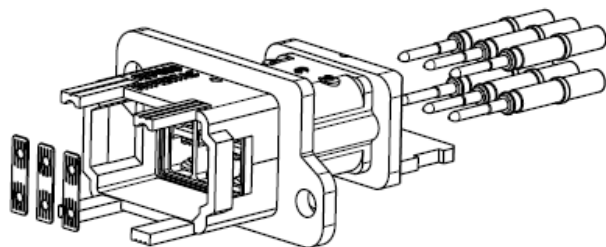
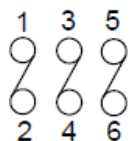
2. Shunt installation



3. Installation complete

REP Connectors | Insulation Performance | Shunt Version

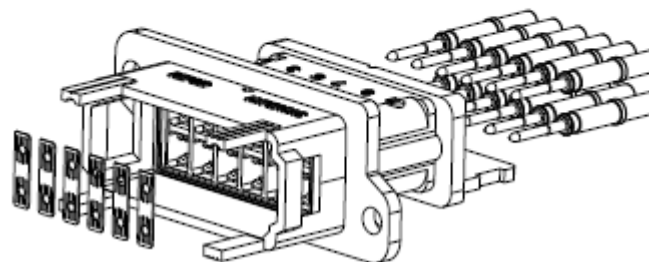
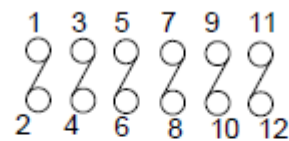
Electric diagram of the connector (shunt)



OV3 PD3 ; 230V ; creepage distance > 6mm – 2 shunts, half alternate equipped

PD2 ; 72V ; creepage distance > 2,3mm – 3 shunts, full equipped

Electric diagram of the connector (shunt)



OV3 PD3 ; 230V ; creepage distance > 6mm – 3 shunts, half alternate equipped

PD2 ; 72V ; creepage distance > 2,3mm – 6 shunts, full equipped

Configurations		Creepage distance	Clearances in air	Voltage rating	Test voltage	Pollution degree acc. EN50124
1	REP V2 with contacts REP V2	5,16 mm	3,81 mm	330V	2455V	3
2	REP V2 with shunt (full)	2,32 mm	2,32 mm	230V	1818V	2
3	REP V2 with shunt (1/2)	7,93 mm	7,06 mm	495 V	3760V	3



1 Series	<table border="0"> <tr> <td>R</td><td>E</td><td>P</td> <td>Series [fixed]</td> </tr> </table>	R	E	P	Series [fixed]																																												
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2 Layout	<table border="0"> <tr> <td>1</td><td>0</td><td>2</td> <td>Plug – 2 socket contacts</td> <td>2</td><td>0</td><td>2</td> <td>Receptacle – 2 pin contacts</td> </tr> <tr> <td>4</td><td>0</td><td>2</td> <td colspan="5">Receptacle for PCB or panel mount – 2 pin contacts</td> </tr> <tr> <td>4</td><td>0</td><td>6</td> <td colspan="5">Receptacle for PCB or panel mount – 6 pin contacts</td> </tr> <tr> <td>4</td><td>1</td><td>2</td> <td colspan="5">Receptacle for PCB or panel mount – 12 pin contacts</td> </tr> <tr> <td>5</td><td>0</td><td>6</td> <td>Plug – 6 socket contacts</td> <td>5</td><td>1</td><td>2</td> <td>Plug – 12 socket contacts</td> </tr> <tr> <td>6</td><td>0</td><td>6</td> <td>Receptacle – 6 pin contacts</td> <td>6</td><td>1</td><td>2</td> <td>Receptacle – 12 pin contacts</td> </tr> </table>	1	0	2	Plug – 2 socket contacts	2	0	2	Receptacle – 2 pin contacts	4	0	2	Receptacle for PCB or panel mount – 2 pin contacts					4	0	6	Receptacle for PCB or panel mount – 6 pin contacts					4	1	2	Receptacle for PCB or panel mount – 12 pin contacts					5	0	6	Plug – 6 socket contacts	5	1	2	Plug – 12 socket contacts	6	0	6	Receptacle – 6 pin contacts	6	1	2	Receptacle – 12 pin contacts
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4 Termination Style

- 0 0** Without contact
- 1 0** Bent termination contact for REP 402, 406 and 412
- 2 0** Crimp contact 24-12 AWG for REP 102, 506, 512, 202, 606 and 612
- 3 0** Straight termination contact for REP 402, 406 and 412

5 Accessories

- 0 0** Without accessory
- 0 1** Filler plug for REP 102, 506, 512, 202, 606 and 612
- 0 2** Plastic dummy contact for REP 102, 506, 512, 202, 606 and 612
- 0 3** Bracket for panel mounting for REP 202, 606 and 612
- 0 4** Spacer for straight termination contact for REP 402, 406 and 412

Rail Market



- High temperature monitoring sensor application
- REP 2way connectors
- Connectors meet the application requirements
 - Severe sealing constraints under dirty conditions
 - High reliability and safety connection

Rail Market



- Train doors application
- REP 6way & 12way connectors
- Connectors meet the application requirements
 - Severe sealing constraints under wet environments
 - High reliability performance for safety application

Rail Market



- **Bogies application**
- REP 2way & 6way connectors
- Pre-cabled value added solution
- Connectors meet the application requirements:
 - Immunity to shock and vibrations
 - High reliability under harsh environment conditions

Rail Market



- **Toilets application: system control unit, hand dryer**
- REP 6way & 12way connectors
- Connectors meet the application requirements:
 - High reliability, long life cycles
 - IP67 sealing

Rail Market (further applications)



- Windscreen wiper
- Headlights
- Seats connection
- Air conditioning
- Floor heating

Other Market Applications, e.g. Industrial



- Information displays
- Printing equipment
- Public works equipment



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