



Proposed New Connector Type for RP-9.1.1.

Proposed to allow more rolling stock with a connector by Reinhard Müller
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5 General Remarks

Many readers will ask, why we need yet another connector. Actually this held me back from this proposal for a long time. But I came to the conclusion that we should at least start to think about a connector smaller in size and easy to install.

10 Whatever the new design is, the other connector types will continue to exist and should therefore stay in the RP. This proposal does not include any recommendation for a new connector yet. It is a list of requirements for a new connector each suggested connector should be compared to

The Old Connectors

These are the "problems" with the current connectors:

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| 15 | Size (N) | The current small connector design was based on German prototype diesel engines. It doesn't fit into the hood of N scale 2 nd generation US diesel engines. |
| | Size (H0) | The medium size connector is just big, based on contacts designed thirty years ago. Old is not necessarily bad, but size is limited inside model locomotives. |
| | Pin count(N) | The current small connector has only 6 pins, so there is not even a pin for the blue wire. But even in N scale users start to add more functions. |
| 20 | Pin count (H0) | In H0 extra functions are very common. The typical combined light with white at the front and red at the back is far from prototype, as there should be no light at the end where the train is coupled. Just for independent light - the bulbs are quite often already there - we need more functions. |

The New Connectors

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| 25 | What should a new design look like, what features does it need? | |
| | Size | It should be small enough to fit into the hood of US prototype N scale diesel engines. (here is a measurement needed!)
The smallest dimension (typically the width) should be less than 0.13", 0.1" would be preferred to fit the small space in N scale engines. |
| 30 | Pin count | It should at least connect the four function leads as provided by the 9-pin JST connector at many current H0-scale decoders. Additional functions will need an extra connector of different size to avoid wrong connections. |
| | Pin arrangement | Wrong insertion should not do any damage to neither the rolling stock nor the decoder even if placed on a life track. Pins with "optional use" like the pin 3 of the medium sized connector shall be avoided, as this leads to confusion and wrong implementations. |
| 35 | Current | As the connector will be found in new designs, there is no need for 1.5 A continuous and 3 A peak current rating. With today's motors half of that is more than enough. However there are power hungry extra functions like smoker or sound, so 1 A continuous should be about the right size. |
| 40 | Mounting | Both connectors - male and female - should be available as SMD. This allows decoders to be attached directly to the connector in the loco. The female part - decoder side - should be also available as IDC connector for easy harness manufacturing in case of wires between connector and decoder. |