# General

## Introduction and Intended Use (Informative)

## References

This standard should be interpreted in the context of the following NMRA Standards.

### Normative

* S-9.1.1 Decoder Interfaces
* S-9.1.1.2 JST 9 Pin Interface
* S-9.1.1.3 21MTC Interface
* S-9.1.1.4 PluX Interface
* S-9.1.1.5 Next18 and Next18-S Decoder Interface

## Terminology

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Vehicle | Mobile model railroad device. This includes locomotives and other rolling stock. |
| Decoder | DCC receiver for controlling vehicle animation. |
| System Board | Electronic circuit board that is considered part of the vehicle with a decoder is intended to be plugged into. |

# Connector Sources

These are known valid connector sources for the various DCC decoder interface standards. Other sources may also be valid.

## JST 9 Pin Interface

JST offer two series of connectors: ZH series uses crimped wires while ZR series are insulation displacement. The decoder socket is the same in both cases. Datasheets for both series listing options may be found at:

ZR Series: <https://order.jst-mfg.com/InternetShop/app/pdf_show?kbn=1&key=eZR.pdf>

ZH Series: <https://order.jst-mfg.com/InternetShop/app/pdf_show?kbn=1&key=eZH.pdf>

### Decoder

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| JST | S9B-ZR-SM2-TF | Shrouded header. |

### System Board (Wire Harness)

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| JST | 09ZR-3H-P  ZHR-9 | Insulation displacement.  Housing for crimped contacts. See datasheet for contact details. |

## 21MTC Interface

### Decoder

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| Samtec | CLP-111-02-F-D |  |
| Aptos Technology | SPNBF-22-X-X-X-FG | Unverified. |

### System Board

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| Samtec | FTSH-111-01-F-DV | Surface mount |
| Samtec | FTS-111-01-F-D | through hole |

## PluX22 Interface

### Decoder

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| Samtec | FTSH-111-01-F-DV | Surface mount |
| Samtec | FTS-111-01-F-D | Through hole |

### System Board

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| Samtec | CLP-111-02-F-D |  |
| Aptos Technology | SPNBF-22-X-X-X-FG |  |

## Next18 and Next18-S Interface

Notes:

* The Panasonic AXK6 series is not a valid connector. It is a close friction fit, but does not have the required positive mating “snap” when mated to the other valid connector options.
* Morethanall connectors have been flagged to the NMRA as having some manufacturing quality issues in 2020 and 2021.

### Decoder

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| Morethanall Co, LTD | NP0519-P05P-018-LF |  |
| Coratec GmbH & Co. KG | CT0519P-05-2x09P-TR | Not verified. MoreThanAll part. |
| Degson Electronics Co., Ltd. | CT0519P-05-2x09P | Not verified, MoreThanAll part. |
| Ningbo Yensen | YSC05-M-1.5-09-G0-R | Not verified |
| CSCONN | CBT-51018M-15 | Not verified |

### System Board

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Part Number** | **Notes** |
| Morethanall Co, LTD | NP0519-S10P-018-LF |  |
| Coratec GmbH & Co. KG | CT0519S-10-2x09P-TR | Not verified, MoreThanAll part. |
| Degson Electronics Co., Ltd. | CT0519S-10-2x09P | Not verified, MoreThanAll part. |
| Ningbo Yensen | YSC05-M-1.5-09-G0-R | Not verified |
| CSCONN | CBT-51018F-15 | Not verified. |

## Manufacturer/Distributor Websites

|  |  |  |
| --- | --- | --- |
| **Manufacturer** | **Web Address** | **Notes** |
| JST Manufacturing | <https://order.jst-mfg.com/InternetShop/app/> | Searchable. |
| Samtec | [www.samtec.com](http://www.samtec.com) | Searchable. |
| Aptos Technology | [www.aptostechnology.com](http://www.aptostechnology.com) | Reported dangerous by some web browser addins. |
| Morethanall Co., LTD | [m.morthanall.com](http://m.morthanall.com/) | Not an HTTPS site. |
| CSCONN Precise Electronics | https://www.csconn.com/Index.aspx |  |
| Ningbo Yensen | Purchase via Coratec. |  |
| Coratec GmbH & Co. KG | [www.coratec.de](http://www.coratec.de) | Not searchable and not HTTPS. Coratec are a distributor. |
| Degson Electronics Co., Ltd. | [www.degson.com](http://www.degson.com) | Searchable. Degson are a distributor. |

Note: many of these items are also available from distributors such as Digikey, and others.

# Document History

|  |  |
| --- | --- |
| **Date** | **Description** |
| Jan 2008 | First Revision |
|  | Updated with improved formatting, updated known part numbers, added JST 9 Pin options, added Next18(-S) options. |
| May 2021 | Revisions to suppliers and web sites. Corrections and additional information. |
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