

## Referensi

- [1] S. Widiyanto, “Kereta Api Transportasi Paling Aman Sepanjang 2017,” *Pikiran Rakyat*, 18 Januari 2018. [Online]. Available: <https://www.pikiran-rakyat.com/ekonomi/pr-01292555/kereta-api-transportasi-paling-aman-sepanjang-2017-418177>. [Diakses 21 Januari 2022].
- [2] W. A. Prodjo, “Tragedi Bintaro 19 Oktober, 33 Tahun Berwarna Merah,” *KOMPAS.com*, 19 November 2020. [Online]. Available: <https://megapolitan.kompas.com/read/2020/10/19/17170081/tragedi-bintaro-19-oktober-33-tahun-lalu-tanah-jakarta-berwarna-merah?page=all>. [Diakses 21 Januari 2022].
- [3] R. N. Velarosdela, “Sejarah Hari ini: 8 Tahun Lalu, Tragedi Truk Tangki Pertamina,” *KOMPAS.com*, 9 Desember 2021. [Online]. Available: <https://megapolitan.kompas.com/read/2021/12/09/12222771/sejarah-hari-ini-8-tahun-lalu-tragedi-bintaro-2-antara-krl-dan-truk?page=all>. [Diakses 21 Januari 2022].
- [4] K. Times, “Perjalanan Terakhir Sang Pahlawan!! Pengiriman Lokomotif CC 201 130R Kecelakaan Kereta Api Sancaka,” *Kepo Times*, 21 Januari 2021. [Online]. Available: <https://kepotimes.com/read/perjalanan-terakhir-sang-pahlawan-pengiriman-lokomotif-cc-201-130r-kecelakaan-kereta-api-sancaka-LS0zc1otMVU0MGVMUQ>. [Diakses 21 Januari 2022].
- [5] NMRA, “NMRA Standards and Recommended Practices,” [Online]. Available: <https://www.nmra.org/index-nmra-standards-and-recommended-practices>. [Diakses 15 11 2022].
- [6] COMPONENTS101, “components101,” 26 4 2018. [Online]. Available: <https://components101.com/microcontrollers/raspberry-pi-3-pinout-features-datasheet>. [Diakses 16 11 2022].
- [7] T. SS, “Transport System Solution,” 2014. [Online]. Available: <http://www.transport-ss.com/brochure/new/signalling/Services%20CTC.pdf>. [Diakses 19 Januari 2022].
- [8] M. V. Neto, “Centralised Traffic Control Centres (CTC),” *CTC Department, Alcatel Port. Cascais P-2750*, 1993.
- [9] B. Enrique, “Alcatel Lucent,” 15 November 2018. [Online]. Available: <https://www.al-enterprise.com/en/blog/comms-heart-of-ops-control-ctr>. [Diakses 19 Januari 2022].
- [10] “PPKA,” [Online]. Available: [http://kk.sttbandung.ac.id/en3/1-3060-2940/Ppka\\_98898\\_ensiklopedia-bebas-q-sttbandung.html](http://kk.sttbandung.ac.id/en3/1-3060-2940/Ppka_98898_ensiklopedia-bebas-q-sttbandung.html). [Diakses 19 Januari 2022].
- [11] H. I. Arafah, “Enam Jam Kerja, PPKA Bisa Tangani 300-An Perjalanan Kereta,” 2020. [Online]. Available: <https://topcareer.id/read/2019/08/30/2352/enam-jam-kerja-ppka-bisa-tangani-300-an-perjalanan-kereta/>. [Diakses 20 Januari 2022].
- [12] K. Perhubungan, “SISTEM PERSINYALAN KERETA API, APA ITU?,” *djka.dephub.go.id*, 2 Juli 2019. [Online]. Available: <https://djka.dephub.go.id/sistem-persinyalan-kereta-api-apa-itu>. [Diakses 1 Januari 2022].
- [13] C. Wu, S. Lu, F. Xue dan L. Jiang, “Intergrated Train Speed Profiles Optimization Considering Signaling System and Delay,” no. IEEE, 2018.

- [14] P. Tech, "Digital Command Control Protocol Decoding," [Online]. Available: <https://www.picotech.com/library/oscilloscopes/digital-command-control-dcc-protocol-decoding>. [Diakses 04 12 2022].
- [15] NMRA, "Electrical Standards for Digital," 9 4 2021. [Online]. Available: [https://www.nmra.org/sites/default/files/standards/sandrp/pdf/s-9.1\\_electrical\\_standards\\_for\\_digital\\_command\\_control\\_2021.pdf](https://www.nmra.org/sites/default/files/standards/sandrp/pdf/s-9.1_electrical_standards_for_digital_command_control_2021.pdf). [Diakses 18 11 2022].
- [16] F. Don, The DCC Guide, 2nd ed, Waukesha: Kalmbach Books, 2014.
- [17] DCC, "Decoder," 17 10 2022. [Online]. [Diakses 21 11 2022].
- [18] D. Wiki, "Multifunction Decoder," 28 06 2022. [Online]. Available: [https://dccwiki.com/Multifunction\\_Decoder](https://dccwiki.com/Multifunction_Decoder). [Diakses 24 11 2022].
- [19] ECampus, "E Campus Ontario," [Online]. [Diakses 01 12 2022].
- [20] N. Standar, "NMRA," 21 4 2021. [Online]. Available: [https://www.nmra.org/sites/default/files/standards/sandrp/pdf/s-9.1\\_electrical\\_standards\\_for\\_digital\\_command\\_control\\_2021.pdf](https://www.nmra.org/sites/default/files/standards/sandrp/pdf/s-9.1_electrical_standards_for_digital_command_control_2021.pdf). [Diakses 16 11 2022].
- [21] NMRA, "Communications Standards For Digital Command Control, All Scales," 1 6 2004. [Online]. Available: <https://www.nmra.org/sites/default/files/s-92-2004-07.pdf>. [Diakses 20 11 2022].
- [22] Raspberry, "Raspberry Pi 3 Datasheet," [Online]. Available: <https://static.raspberrypi.org/files/product-briefs/Raspberry-Pi-Model-Bplus-Product-Brief.pdf>. [Diakses 01 12 2022].
- [23] 1. Components, "Raspberry Pi 3 Pinout Feature," 26 04 2018. [Online]. Available: <https://components101.com/microcontrollers/raspberry-pi-3-pinout-features-datasheet>. [Diakses 01 12 2022].
- [24] M. Plumbo, "Railway Signalling Since the Birth to ERTMS," 2013.
- [25] F. Flammini, "Control System For High-Speed Rail," 2010.
- [26] E. Ramsden, Hall-Effect Sensors Theory and Application, Burlington: Elsevier, 2006.
- [27] A. J. P.R. Goundan, "Axle Counter Base Block Signalling for Safe and Efficient Train Operations," *VCT'99*, no. IEEE, pp. 824-828, 1999.
- [28] S. Yasukawa, N. Takagi dan etc., "Design Optimization of Magnetic Sensor for Train Detection," *IEEE Transaction on Magnetics*, no. IEEE, p. 3, 2015.
- [29] R. M. Craftsman, "Railroad Craftsmant," 1 1 2020. [Online]. Available: <https://rrmodelcraftsman.com/model-train-scale-gauge/>. [Diakses 30 11 2022].
- [30] P. Mike, Basis DCC Wiring for Your Model Railroad, Waukesha: Kalmbach Books, 2011.
- [31] F. J. Philip, "Rekayasa Jalan Rel," [Online]. Available: <http://www.ocw.upj.ac.id/files/Slide-TSP409-Pertemuan-9-Wesel-dan-persilangan.pdf>. [Diakses 19 Januari 2022].
- [32] L. Pucket, DCC Project & Aplication : Wiring and Electronics, 4th ed., Waukesha: Kalmbach Books, 2019.
- [33] Kemenhub, "Prasarana Jadi Penyebab Utama Kecelakaan Kereta Api dalam 6 Tahun Terakhir," 2020. [Online]. Available: <https://databoks.katadata.co.id/datapublish/2021/09/24/prasarana-jadi-penyebab-utama-kecelakaan-kereta-api-dalam-6-tahun-terakhir>. [Diakses 18 Januari 2022].
- [34] S. Chanthakit dan C. Rattanapoka, "MQTT Based Air Quality Monitoring System using NodeMCU and Node-RED," *ICT International Student Project Conference*, 2018.



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- [35] M. Markovic, M. Maljkovic dan R. N. Hasanah, "Smart Home Heating Control using Raspberry Pi and Blynk IoT Platform," *Electrical Power, Electronics, Communications, Control and Informatics Seminar*, 2020.
- [36] "Embedded Computing," [Online]. Available: <https://embeddedcomputing.weebly.com/iot-services-which-solution.html>. [Diakses 20 Januari 2022].