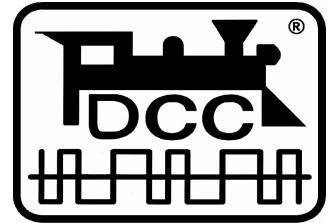


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Minutes

The Spring DCC meeting was held March 28th and 29th in Wegberg-Kipshoven, Germany. Attendees were:

Juergen Linder	ESU	Ingo Planert	Viessmann
Bernd Lenz	Lenz	Joachiem Dietz	Dietz Modelbahntechnik
Georg Fuhs	Roco	Guther Hohlbaum	Dietz Modelbahntechnik
Rutger Friberg	NMRA # 101462	Peter Littfinski	Littfinski Datentechnik
Brian Barnt	NRMA #L5192	Reinhard Mueller	NMRA #??
Stan Ames	NMRA #L5357	Stefano Chili-Batelli	Uhlenbrock
David Nickolson	ZTC	Torsten Kuhn	Kuhn
Dr. Thomas Vaupel	Uhlenbrock	Winfried Seewald	Tillig
Dr. Frank Gruenig	Fleischmann	Thomas Gutche	Lenz

1.1. Review of Fall Meeting

No corrections.

1.2. Bi-Directional Communications

1.2.1. Patent Issues – Patent 6,539,292 Granted, Lenz 20mA Pending, Post Lenz and Ames Agreement

Lenz, Bernd. “Digital multi-train control with bi-directional data transmission in model railways”, US Patent 6,494,410. Sub-license rights granted to NMRA with conditions.

Ames, Stan. “Using location-influenced behavior to control model railroads”, US Patent 6,539,292, sub-license rights granted to the NRMA with conditions.

1.2.2. Approach -

Discussed Current-Loop approach, and it's advantages over the frequency-burst method.

Approved new approach: 15 yea- 0 nay – 6 abs.

1.2.3. RP-9.3.1 – Electrical Specifications for DCC Decoder Transmission

Discussed and adopted changes. 12 yea – 0 nay – 9 abs.

1.2.4. RP-9.3.2 – Communications Protocol for DCC Decoder Transmission

Discussed and adopted changes. 13 yea – 0 nay – 8 abs.

1.2.5. RP-9.2.1 and RP-9.2.3 Changes for Bi-Directional

RP-9.2.3 -- Section D:

Eliminate ‘Advanced Acknowledgement’ and rename ‘Basic Acknowledgement’ to ‘Service Mode Acknowledgement’.

Approved: 19 – 0 – 1

RP-9.2.1 – Decoder Control

- Add Decoder Control instruction details at line 126 to enable/disable Bi-Directional communications. CCC = 011.
- Update Decoder Control instruction at line 130 to reflect name changes in RP-9.2.3
- Update Consist Control instructions to refer to RP-9.3.2 to describe Bi-Directional communications when consisting.
- Add references to RP-9.3.2 for response to Advanced Operations Instructions, Speed & Direction, Function Group 1, and Function Group 2 instructions.
- Add references to RP-9.3.2 for Configuration Variable Access Acknowledgement, CV Access Short Form, and CV Access Long Form instructions.
- Add references to RP-9.3.2 for response to Accessory Decoder Instruction, Extended Accessory Decoder Instruction, and Accessory Decoder Access Instruction.

Discussed and Modified; Move verify to appendix: 12 – 0 – 7

RP-9.2.1 Approved as noted: 18 – 0 – 1

RP-9.2.2 Approved : 18 – 0 – 1

(Note: On May 5, an alternate proposal was submitted before these minutes were published. This proposal would require further modifications to RP-9.2.1 and RP-9.2.2. This Topic #0305051 will be considered for inclusion, and will delay the submission of these RPs to the NMRA Board of Trustees.)

1.3. Topic 0303102 – RP-9.2.3 Direct Mode Requirements

In RP-9.2.3, Line 98, the sentence “A Command Station, Programmer, or Decoder, which supports Direct Mode, must implement all three instruction-types.” Incorrectly assumes that all command station/programmers can read the acknowledgement signal. This sentence should read “A Decoder which supports Direct Mode, must implement all three instruction-types.”

Approved: 18 – 0 – 1

Further proposal to strike dates in line 304 with ‘legacy’

Approved: 12 – 0 – 4

1.4. Topic 0303103 – RP-9.2.3 Service Mode Idle / Exit Instruction

Proposal Withdrawn, topic struck.

1.5. Topic 0303101 – RP-9.1.2 Timing Revisions

The current draft of RP-9.1.2, section 2.11 contains a diagram to measure the Command Station output against a “standard waveform”. Since this waveform is theoretical, there is no way to measure the Command Station output against it to find the delay. This diagram was removed. A typographical error was also found with the maximum zero bit time (was 9888 instead of 9898).

Strike Lines 35-39

Section 2.11 also specifies that the nominal bit time for a one-bit is $58 \pm 1 \mu\text{s}$. This bit time cannot be produced using hardware PWM. I propose we widen the tolerance to $58 \pm 2 \mu\text{s}$ to allow for hardware PWM generation at 56 μs .

Modify Proposal so document reads $58 + 1/-2 \mu\text{s}$.

Approved 16 – 0 – 2

1.6. Topic 0302241 – SUSI Extended Sound Interface

Presentation about SUSI interface. *See Tech Note TI-9.2.3.*

1.7. Topic 0302031 – RP-9.2.1 Change - Extended Accessory Decoder Packet

NCE has been implementing and testing DCC signal decoders using the proposed Extended Accessory Decoder Control Packets outlined in proposed RP-9.2.2 (April 2002).

Approved as proposed: 12 – 0 – 7

The format of the packet is:

0 10AAAAAA 0 0AAA0AA1 0 000XXXXX 0 EEEEEEEE 1

Georg Fuhs will propose companion CVs for this instruction.

1.8. Topic 02101401, RP-9.1.1 Decoder Space

A proposal was received from Reinhard Mueller for better fit of decoders into rolling stock *[including locomotives]* The proposal is attached to the minutes as a separate .PDF file.

No conclusion was reached, but it was suggested that we define space in HO and N scale locomotives to start with.

1.9. Topic 0303281, S-9.1 Change

During testing of bi-directional communications, it became clear that all decoders require some time to recognize the packet end bit. The Standard currently implies that other signals are allowed immediately after the packet end bit. The intent was to allow other signals interspersed with DCC packets (for example Maerklin Motorola format). To clarify when gaps are allowed, a sentence was added to refer to S-9.2.

An additional 26 μ S is required after the packet end bit, before power interruption may occur.

Modify the diagrams so that typical voltage rating are shown with a dashed line.

Approved: 17 – 0 – 2

1.10. Topic 0303282, S-9.2 Change

The sentence allowing multiple protocols was emphasized, and a description of when power gaps are specifically allowed was added.

Approved: 17 – 0 – 2