“Engineered” power delivery
1000 m Link Segment

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Purpose

- **Scope**
  - **Continuation of development of 802.3cg baseline "Optional Power Distribution annex".**

Contributors

- Ronald Nordin, Bob Voss – Panduit
- Steffen Graber, Timo Graber – Pepperl+Fuchs

Background

Motion #12

Move to create normative annex in 802.3cg baseline "Optional Power Distribution annex" to include:

- ***Power/voltage/current/DCR for link segment (point-to-point/plug-and-play) topologies* slide 12 diminico_02_0517.pdf.***
- ***"engineered" power delivery for other topologies* (trunk cables) slide 14 diminico_02_0517.pdf.***
- ***Link Segment DCR characteristics slide 19 diminico_02_0517.pdf.***

- ***M: C. Diminico S: S. Graber***
- ***Y: 18 N: 0 A: 9***
- **Motion Passes (Technical >= 75%)**

http://www.ieee802.org/3/cg/public/May2017/motions_3cg_01b_0517.pdf

Background

- Link Segment DCR characteristics slide 19 diminico_02_0517.pdf.

AWG	Resistance per meter (ohm)	Length @ IL limit (m)	Conductor resistance @ IL limit (ohm)	Loop resistance @ IL limit (ohm)	10 connector DCR	Link segment resistance @ IL limit (ohm)
14	0.0092	1589	14.67	29.33	4.00	33.33
15	0.0116	1415	16.47	32.94	4.00	36.94
16	0.0147	1261	18.50	37.00	4.00	41.00
17	0.0185	1123	20.78	41.55	4.00	45.55
18	0.0233	1000	23.33	46.66	4.00	50.66
19	0.0294	891	26.20	52.40	4.00	56.40
20	0.0371	793	29.42	58.84	4.00	62.84
21	0.0468	706	33.04	66.07	4.00	70.07
22	0.0590	629	37.10	74.19	4.00	78.19
23	0.0744	560	41.66	83.31	4.00	87.31
24	0.0938	499	46.78	93.55	4.00	97.55

http://www.ieee802.org/3/cg/public/May2017/motions_3cg_01b_0517.pdf

Background

Motion #13

- ***Move to adopt in 802.3cg baseline Optional Power Distribution annex baseline power requirements for (point-to-point/plug-and-play) powered devices in Table below:***

Class	Vpse, min V	Ipi, max (A)	Rloop (60C) ohm	Ppd (1000m) W
new 1	20	.102	59	1.4
new 2	20	.155	39	2.2
new 3	50	.255	59	8.9
new 4	50	.388	39	13.6

- ***M: C. Diminico S: H. Stewart***
- ***Y: 20 N: 0 A: 9***
- **Motion Passes (Technical >= 75%)**

http://www.ieee802.org/3/cg/public/May2017/motions_3cg_01b_0517.pdf

Annex – Powered Devices

- normative annex in 802.3cg baseline “Optional Power Distribution annex” to include:
  - Power/voltage/current/DCR for link segment (point-to-point/plug-and-play) topologies* slide 12 diminico_02_0517.pdf.

Point-to-Point Powered Devices

Class	Vpse, min V	Ipi, max (A)	Rloop (60C) ohm	Ppd (1000m) W
new *1	20	.102	59	1.4
new 2	20	.155	39	2.2
new 3	50	.255	59	8.9
new 4	50	.388	39	13.6

**new refers to in addition to PoDL classes*

Annex – Point-to-point

- Link Segment DCR

AWG	Resistance per meter (ohm)	Length @ IL limit (m)	Conductor resistance @ IL limit (ohm)	Loop resistance @ IL limit (ohm)	10 connector DCR	Link segment resistance @ IL limit (ohm)
14	0.0092	1589	14.67	29.33	4.00	33.33
15	0.0116	1415	16.47	32.94	4.00	36.94
16	0.0147	1261	18.50	37.00	4.00	41.00
17	0.0185	1123	20.78	41.55	4.00	45.55
18	0.0233	1000	23.33	46.66	4.00	50.66
19	0.0294	891	26.20	52.40	4.00	56.40
20	0.0371	793	29.42	58.84	4.00	62.84
21	0.0468	706	33.04	66.07	4.00	70.07
22	0.0590	629	37.10	74.19	4.00	78.19
23	0.0744	560	41.66	83.31	4.00	87.31
24	0.0938	499	46.78	93.55	4.00	97.55

http://www.ieee802.org/3/cg/public/May2017/motions_3cg_01b_0517.pdf

Annex – Point-to-point

- Closed form equation for other point-to-point powered devices based on power/voltage/current/DCR/Temperature (TBD)

Summary

- **Continuation of development of 802.3cg baseline "Optional Power Distribution annex".**