

Autoneg Enhancements

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Proposed Changes

- Correct some of the timing in D1.2 draft
- Scale Technology Ability field to add a Vendor information field in the Base Page Exchange
- Add an optional next page to exchange Model ID, Revision, and Miscellaneous information between PHYs

SPECIFICATION UPDATES

Table 98-1 Changes

- **Tighten T2 and T3 Timing,**
- **Make changes to Table 98-1 T4a and T5 to reflect changes agreed to in January**

	Parameters	Min	Typ	Max	Units
T1	Transmit Position Spacing	29.997	30.000	30.003	ns
T2	Clock transition to clock transition	59.8	60.0	60.2	ns
T3	Clock transition to data transition (data = 1)	29.9	30.0	30.1	ns
T4a	+1 to -1 or -1 to +1 transitions in a DME page	79	-	143	
T4b	0 to +/-1 or +/-1 to 0 transitions in a DME page	2	2	2	
T5	DME page width	4619	4620	4621	ns

VENDOR ID IN BASE PAGE EXCHANGE

Vendor ID

- Add a Vendor ID into the Link Codeword Base Page
- In 98.2.1.2 Link Codeword encoding
 - Change Technology ability field from 27 bits to 20 bits[19:0]
 - Add section 9.2.1.2.6:
 - Vendor ID[6:0] is a 7-bit number denoting the Vendor of the Clause 98-supported PHY in the Link Codeword base page
- Vendor ID will need to be assigned by IEEE.

Figure 98-8 (revised)

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15
S0	S1	S2	S3	S4	E0	E1	E2	E3	E4	C0	C1	M/S	RF	Ack	NP
D16	D17	D18	D19	D20	D21	D22	D23	D24	D25	D26	D27	D28	D29	D30	D31
T0	T1	T2	T3	T4	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
D32	D33	D34	D35	D36	D37	D38	D39	D40	D41	D42	D43	D44	D45	D46	D47
A11	A12	A13	A14	A15	A16	A17	A18	A19	V0	V1	V2	V3	V4	V5	V6

Figure 98-8 is revised to show Vendor ID in D[47:41].
Technology Ability field is now 20 bits (D[40:21])

VENDOR-SPECIFIC MESSAGE CODE

NEXT PAGE

New Next Page

- Add 98C.4 Message Code 2 to Annex 98C
- 98C.4 Message Code 2 – Model ID, Revision, Extended Vendor Code
- This optional Next Page sends the Model ID, Revision, Extended Vendor Code, and a Vendor-specific information field in an optional Next Page to the link partner.

Table 98C-1 Revised

Message Code	M10	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0	Message Code Description
0	0	0	0	0	0	0	0	0	0	0	0	Reserved for future Auto-Negotiation use
1	0	0	0	0	0	0	0	0	0	0	1	Null Message
2	0	0	0	0	0	0	0	0	0	1	0	ModelD Revision Page
3 to 2047	1	1	1	1	1	1	1	1	1	1	1	Reserved for future Auto-Negotiation use

Table 98C-1 is revised to show Message Code 2 defined. Message 3 to 2047 remain reserved for future Auto-Negotiation use.

98C.4 Message Code 2 – Model ID and Revision Code

Add this text to end of Clause 98C:

98C.4 Message Code 2 – Model ID and Revision Code

The Model ID and Revision code may be transmitted during Next Page exchange when the Local Device wishes to exchange Model ID, Revision, and Vendor-defined information to the Link Partner. See 98.2.4.3 for more details on use of Next Pages.

Add New Subclause 98C.4

Add New Figure 98C-1 which contains the following fields to define Message Code 2:

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15
M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	T	Ack2	MP	Ack	NP

D16	D17	D18	D19	D20	D21	D22	D23	D24	D25	D26	D27	D28	D29	D30	D31
MN0	MN1	MN2	MN3	MN4	MN5	RV0	RV1	RV2	RV3	EV0	EV1	EV2	EV3	EV4	EV5

D32	D33	D34	D35	D36	D37	D38	D39	D40	D41	D42	D43	D44	D45	D46	D47
MSC0	MSC1	MSC2	MSC3	MSC4	MSC5	MSC6	MSC7	MSC9	MSC9	MSC10	MSC11	MSC12	MSC13	MSC14	MSC15

Message Code 2: Model ID and Revision Page

Add this text into 98C.4:

- The T, Ack, Ack2, MP, and NP bits function per the description in 98.2.4.3.1 and 98.C.1
 - The M[10:0] field is formatted as 10'b0000000010.
- The Unformatted code field is partitioned as follows:
 - D[21:16] MN[5:0] **Model Number** contains a 6-bit field containing the vendor's model number
 - D[25:22] RV[3:0] **Revision Number** contains a 4-bit field containing the vendor's revision number
 - D[31:26] EV[5:0] **Extended Vendor Code** Reserved for future Auto-Negotiation Development. Write as 5'b00000.
 - D[47:32] MSC[16:0] **Miscellaneous** A vendor may transmit 16 bits of data in this field, or write it as all zeros. The format of this data is up to vendor implementation.

Summary

- Proposed changes for the Electrical Specification to match changes agreed at January Meeting
- Add a Vendor ID to Base Page Exchange
- Add an optional Message Code Next Page to exchange additional information between the PHYs