79. IEEE 802.3 Organizationally Specific Link Layer Discovery Protocol (LLDP) type, length, and value (TLV) information elements

79.3 IEEE 802.3 Organizationally Specific TLVs

Note: the Table and Figure numbers are unchanged from 802.3bt and must be updated per the latest status of 802.3-2018 amendements. This note not to appear in the draft.

Change Table 79-1 as follows:

Table 79–1—IEEE 802.3 Organizationally Specific TLVs

IEEE 802.3 subtype	TLV name	Subclause reference
1	MAC/PHY Configuration/Status	79.3.1
2	Power Via Medium Dependent Interface (MDI)	79.3.2
3	Link Aggregation (deprecated)	79.3.3
4	Maximum Frame Size	79.3.4
5	Energy-Efficient Ethernet	79.3.5
6	EEE fast wake	79.3.6
7	Additional Ethernet Capabilities	79.3.7
8	Power Via MDI Measurements	79.3.8
9	Power over Data Lines Measurements	79.3.9
10 ~~9~~ to 255	Reserved	—

Insert 79.3.9 after 79.3.8 as follows:

79.3.9 Power over Data Lines Measurements TLV

Clause 104 (MAKE LINK) defines two optional power entities: a Powered Device (PD) and Power Sourcing Equipment (PSE). These entities allow devices to draw/supply power over the same generic cabling as used for data transmission. The Power over Data Lines Measurement TLV allows network management to read electrical measurement data from the sending IEEE 802.3 LAN station. Figure 79–9 shows the format of this TLV.

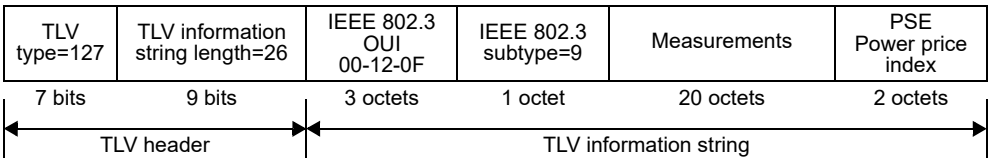

Figure 79–9—Power over Data Lines Measurements TLV format

79.3.9.1 Measurements

This field shall be set according to Table 79–8a.

The ‘Voltage measurement’ field carries the measured voltage value at the PI, the ‘Current measurement’ field carries the measured current value at the PI, the ‘Power measurement’ field carries the measured power value at the PI, and the ‘Energy measurement’ field carries the measured energy consumption value at the PI, as defined in Table 79–8a.

Measurement values (voltage, current, power, or energy) shall be set to 0 in case the corresponding request bit is 0. If a device does not support a particular measurement, the corresponding measurement value shall be set to 0.

Table 79–8a—Measurements

Bit	Function	Value/meaning
159	Voltage support	1 = Device supports voltage measurement 0 = Device does not support voltage measurement
158	Current support	1 = Device supports current measurement 0 = Device does not support current measurement
157	Power support	1 = Device supports power measurement 0 = Device does not support power measurement
156	Energy support	1 = Device supports energy measurement 0 = Device does not support energy measurement
155:152	Reserved	
151	Voltage request	1 = Request for voltage measurement 0 = No request for voltage measurement
150	Current request	1 = Request for current measurement 0 = No request for current measurement
149	Power request	1 = Request for power measurement 0 = No request for power measurement
148	Energy request	1 = Request for energy measurement 0 = No request for energy measurement
147	Voltage measurement valid	1 = Voltage measurement field contains valid data 0 = Voltage measurement disabled
146	Current measurement valid	1 = Current measurement field contains valid data 0 = Current measurement disabled
145	Power measurement valid	1 = Power measurement field contains valid data 0 = Power measurement disabled
144	Energy measurement valid	1 = Energy measurement field contains valid data 0 = Energy measurement disabled
143:128	Voltage uncertainty	Expanded uncertainty (coverage factor k = 2) for the voltage measurement, expressed in units of 1 mV. Valid values are 1 through 65000.
127:112	Current uncertainty	Expanded uncertainty (coverage factor k = 2) for the current measurement, expressed in units of 0.1 mA. Valid values are 1 through 65000.
111:96	Power uncertainty	Expanded uncertainty (coverage factor k = 2) for the power measurement, expressed in units of 10 mW. Valid values are 1 through 65000.

Table 79–8a—Measurements *(continued)*

Bit	Function	Value/meaning
95:80	Energy uncertainty	Expanded uncertainty (coverage factor k = 2) for the energy measurement, expressed in units of 0.1 kJ. Valid values are 1 through 65000.
79:64	Voltage measurement	$V_{Port\_PD\text{-}2P}$ expressed in units of 1 mV. When the Measurement source is set to 'Port total' this field contains the measurement of the pairset with the highest voltage. Valid values are 0 through 65000[a].
63:48	Current measurement	I_{Port} or $I_{Port\text{-}2P}$ expressed in units of 0.1 mA. Valid values are 0 through 20000.
47:32	Power measurement	Power sourced or drawn expressed in units of 10 mW. Valid values are 0 through 10000.
31:0	Energy measurement	Energy consumed at the port or pairset expressed in units of 0.1 kJ since power on. Valid values are 0 through 4294967295.

[a]NOTE—The valid range of this field extends beyond the allowed operating range of $V_{Port\_PD\text{-}2P}$, see 104.3 (MAKE LINK).

79.3.9.2 PSE power price index

The 'PSE power price index' field shall contain an index of the current price of electricity compared to what the PSE considers the nominal electricity price. The determination of the nominal electricity price is implementation dependent. The field is encoded as defined in Equation (79–1). The PSE sets the value of this field taking the availability of power from any external and internal resources, and the relative supply and demand balance, into account. A value of 0xFFFF means that no power price index is available.

Table 79–8b—Power price index

Bit	Function	Value/meaning
15:0	Power price index	Valid values for these bits are decimal 0 through 65000, and hexadecimal value 0xFFFF.

$$K_{PPI} = \left(\frac{(\text{Power price index} + 10046) \times 2{,}512}{75046}\right)^5 \quad (79\text{–}1)$$

where

K_{PPI} is the power price index expressed as a factor ranging from 0.0004 to 100 times the nominal price

Power price index is the value of the 'Power price index' field defined in Table 79–8b

79.3.9.3 Power over Data Lines Measurements TLV usage rules

An LLDPDU should contain no more than one Power over Data Lines Measurements TLV.

79.4 IEEE 802.3 Organizationally Specific TLV selection management

79.4.2 IEEE 802.3 Organizationally Specific TLV/LLDP Local and Remote System group managed object class cross references

Create a new "Power via Data Lines Measurements" TLV name group into Table 79-10 and Table 79-11 as follows:

Table 79–10—IEEE 802.3 Organizationally Specific TLV/LLDP Local System Group managed object class cross references

TLV name	TLV variable	LLDP Local System Group managed object class attribute
Power via MDI Measurements	Voltage support	aLldpXdot3LocMeasVoltageSupport
	Current support	aLldpXdot3LocMeasCurrentSupport
	Power support	aLldpXdot3LocMeasPowerSupport
	Energy support	aLldpXdot3LocMeasEnergySupport
	Voltage request	aLldpXdot3LocMeasVoltageRequest
	Current request	aLldpXdot3LocMeasCurrentRequest
	Power request	aLldpXdot3LocMeasPowerRequest
	Energy request	aLldpXdot3LocMeasEnergyRequest
	Voltage measurement valid	aLldpXdot3LocMeasVoltageValid
	Current measurement valid	aLldpXdot3LocMeasCurrentValid
	Power measurement valid	aLldpXdot3LocMeasPowerValid
	Energy measurement valid	aLldpXdot3LocMeasEnergyValid
	Voltage uncertainty	aLldpXdot3LocMeasVoltageUncertainty
	Current uncertainty	aLldpXdot3LocMeasCurrentUncertainty
	Power uncertainty	aLldpXdot3LocMeasPowerUncertainty
	Energy uncertainty	aLldpXdot3LocMeasEnergyUncertainty
	Voltage measurement	aLldpXdot3LocVoltageMeasurement
	Current measurement	aLldpXdot3LocCurrentMeasurement
	Power measurement	aLldpXdot3LocPowerMeasurement
	Energy measurement	aLldpXdot3LocEnergyMeasurement
	PSE Power price index	aLldpXdot3LocPSEPowerPriceIndex

Table 79–11—IEEE 802.3 Organizationally Specific TLV/LLDP Remote System Group managed object class cross references

TLV name	TLV variable	LLDP Remote System Group managed object class attribute
Power via MDI Measurements	Voltage support	aLldpXdot3RemMeasVoltageSupport
	Current support	aLldpXdot3RemMeasCurrentSupport
	Power support	aLldpXdot3RemMeasPowerSupport
	Energy support	aLldpXdot3RemMeasEnergySupport
	Voltage request	aLldpXdot3RemMeasVoltageRequest
	Current request	aLldpXdot3RemMeasCurrentRequest
	Power request	aLldpXdot3RemMeasPowerRequest
	Energy request	aLldpXdot3RemMeasEnergyRequest
	Voltage measurement valid	aLldpXdot3RemMeasVoltageValid
	Current measurement valid	aLldpXdot3RemMeasCurrentValid
	Power measurement valid	aLldpXdot3RemMeasPowerValid
	Energy measurement valid	aLldpXdot3RemMeasEnergyValid
	Voltage uncertainty	aLldpXdot3RemMeasVoltageUncertainty
	Current uncertainty	aLldpXdot3RemMeasCurrentUncertainty
	Power uncertainty	aLldpXdot3RemMeasPowerUncertainty
	Energy uncertainty	aLldpXdot3RemMeasEnergyUncertainty
	Voltage measurement	aLldpXdot3RemVoltageMeasurement
	Current measurement	aLldpXdot3RemCurrentMeasurement
	Power measurement	aLldpXdot3RemPowerMeasurement
	Energy measurement	aLldpXdot3RemEnergyMeasurement
	PSE Power price index	aLldpXdot3RemPSEPowerPriceIndex