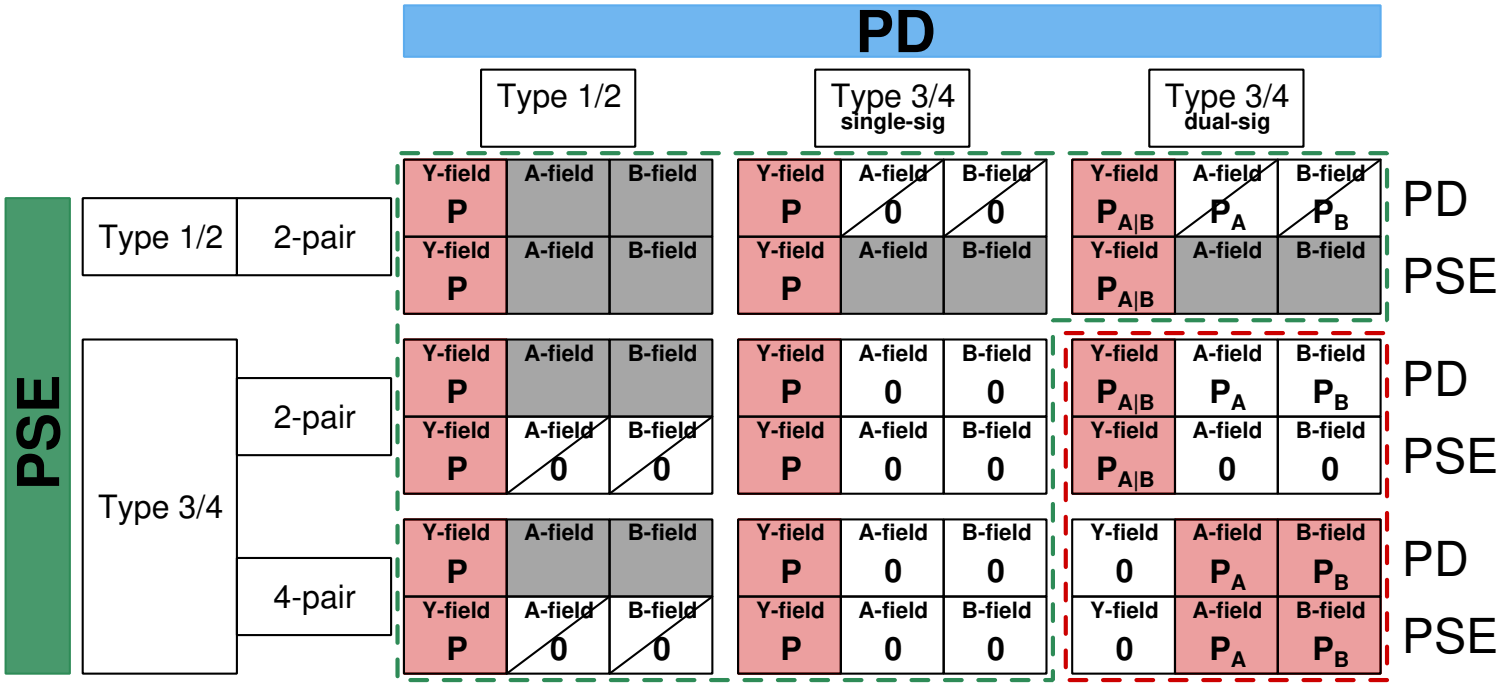

0	Field is set to zero
P	Power for a single-signature or legacy device
P_A	Power for Mode A on a dual-signature PD
P_B	Power for Mode B on a dual-signature PD
$P_{A\|B}$	Power for Mode A or Mode B on a dual-signature PD (whichever is powered on)
Y-field	Fields PSEAllocatedPower and PDRequestedPower
A-field	Fields PSEAllocatedPower_ModeA and PDRequestedPower_ModeA
B-field	Fields PSEAllocatedPower_ModeB and PDRequestedPower_ModeB
	Fields the PSE will use for power allocation
	Unsupported field (will not be sent out)
	Supported field, but not understood by link partner

P802.3bt D3.0 – Dual-signature LLDP v151

Info (not part of baseline)

Purpose

This is an overhaul for the LLDP specification in Clause 79, specifically addressing dual-signature operation. It aims to address the issues raised in comments #130, #293, #294, #296, and #297.

All of the requirements we currently have in Clause 79 regarding which fields to set to which value depending on the PD Type and such really don't belong there. Clause 79 defines the format of the PoE TLV. How that TLV is to be used must be defined in Clause 33 and Clause 145. Therefore this baseline scraps all of the requirements that were added to subclauses 79.3.2.5, 79.3.2.6, and it's dual-signature brethren.

Changelog

v100 First full proposal
v110 Moved DLL requirements to Clause 145 from Clause 79
v111 Comments Heath Stewart (editorial)
v120 4PID bit + restrict new fields to Type 3/4 devices only
v130 Back to using a single pd_dll_enable / pse_dll_enable variable for the dual-mode DLL diagrams ~~+ big renaming (single-mode and dual-mode DLL)~~
v131 Review Yair: ...
v140 Implemented state diagram changes per (original) concept LLDP adhoc
v141 Address comment i-391, review Yair, define twopairmode and fourpairmode
v142 Updated PSE maximum available power description for dual-signature
v150 Major review by Heath (update state diagrams, define PD_REQUESTED_VALUE_mode(X), update to 145.5.3.7.2
v151 Setting 'Mirrored_*' variables prior to using them

145.5.3 Power control state diagrams

The power control state diagrams for PSEs and PDs specify the externally observable behavior of a PSE and PD Data Link Layer classification respectively.

Info (not part of baseline)

Type 3/4 PSEs need to always 'run' both the single-signature and the dual-signature state diagrams. These state diagram control the logic needed to set the values of the respective fields correctly.

~~Data Link Layer classification of PSEs connected to a single-signature PD, shall provide the behavior in the state diagram defined in Figure 145–39 and Figure 145–40. Data Link Layer classification of PSEs connected to a dual-signature PD, shall provide the behavior in the state diagram defined in Figure 145–43.~~

Data Link Layer classification of PSEs shall provide the behavior in the state diagrams defined in Figure 145–39, Figure 145–40, Figure 145–43, and Figure 145–43a.

Info (not part of baseline)

For PDs it's different. Single-signature PDs only need to run the single-signature state diagram, dual-signature PDs run both a 2-pair and 4-pair version of their DLL state diagrams.

Single-signature PD Data Link Layer classification shall provide the behavior of the state diagram defined in Figure 145–41 and Figure 145–42. Dual-signature PD Data Link Layer classification shall provide the behavior of the state diagram defined in Figure 145–44, and Figure 145–44a.

Insert new subclause 145.5.3a before 145.5.4 as follows:

145.5.3a Power requests and allocations

The variables PDRequestedPowerValue and PDRequestedPowerValue_mode(X) allow a PD to request an amount of power from the PSE. The variables PSEAllocatedPowerValue and PSEAllocatedPowerValue_alt(X) allow the PSE to allocate an amount of power to the PD.

PSEs shall use values in the range defined in Table 145–41 for PSEAllocatedPowerValue and PSEAllocatedPowerValue_alt(X) where X can be A or B. PDs shall use the values in the range defined in Table 145–42 for PDRequestedPowerValue and PDRequestedPowerValue_mode(X) where X can be A or B.

Table 145–41 — Permitted values for PSEAllocatedPowerValue and PSEAllocatedPowerValue_alt(X)

Powering mode	PD configuration	PSEAllocatedPowerValue	PSEAllocatedPowerValue_alt(X)
2-pair	—	1 – 255[a]	0
4-pair	single-signature	1 – 999	0
	dual-signature	0	1 – 499

[a] NOTE—A PSE that has encountered a fault that requires to operate in 2-pair mode, may use values 1–499 for this variable.

Table 145–42 — Permitted values for PDRequestedPowerValue and PDRequestedPowerValue_mode(X)

Powering mode	PD configuration	PDRequestedPowerValue	PDRequestedPowerValue_mode(X)
—	single-signature	1 – 999	0
2-pair	dual-signature	1 – 255[a]	1 – 499
4-pair		0	1 – 499

[a] NOTE—A PD that has encountered a fault that requires to operate in 2-pair mode, may use values 1–499 for this variable.

145.5.3 Power control state diagrams

Editor to add/remove to the variable lists such that they match with what is used in the state diagrams.

145.5.3.3 PSE power control state diagrams (single-signature)

~~This subclause contains the variables and state diagrams the PSE uses when connected to a single-signature PD, or when it is providing power over 2 pairs.~~

This state diagram controls the PSEAllocatedPowerValue variable, which is used to allocate power to a PD. This variable and the corresponding LLDPDU field is used for power allocation when the PSE is connected to a single-signature PD, or when the PSE is only capable of supplying power over 2-pair.

145.5.3.3.3 State diagrams

Info (not part of baseline)

This is one of the three state diagrams that the PSE needs to run. It sits in IDLE whenever DLL isn't enabled or not ready, or when the other state diagrams need to be in control (dual-signature detected). It proceeds to INITIALIZE when DLL is ready and the PD is a single-signature, or the PSE is restricted to 2-pair operation.

Also fixed is the issue where Mirrored_* variables are read before they are set. Mirrored variables contain the contents of incoming LLDPDUs and get set only when a frame is received. During the time between the first frame being received and DLL being enabled, their value is undefined. Fixes related to this issue are marked with a purple circle.

Change Figure 145–39 as follows:

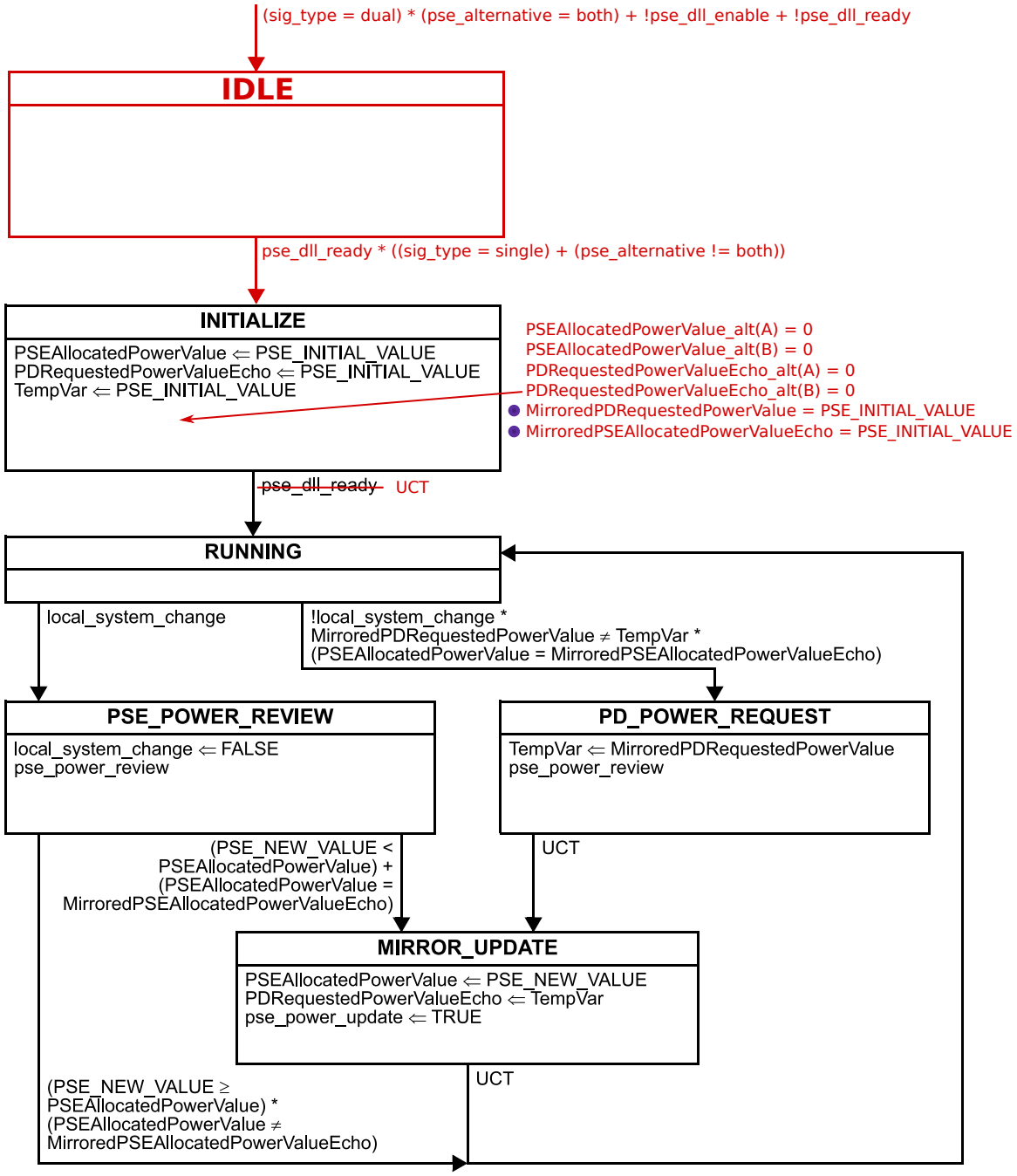

Figure 145–39—PSE power control state diagram for single-signature PDs

145.5.3.4 Single-signature PD power control state diagram

Add the following text to this empty subclause:

This state diagram controls the PDRequestedPowerValue variable, which is used to request power from a PSE, when the PD is a single-signature PD.

145.5.3.4.5 State diagrams

Info (not part of baseline)

This is the state diagram for single-signature PDs. By setting the A/B fields to zero in INITIALIZE we have made this state diagram self-sufficient for single-signature. The other state diagrams intended for dual-signature do not need to run (as reflected in the text earlier).

Change Figure 145–41 as follows:

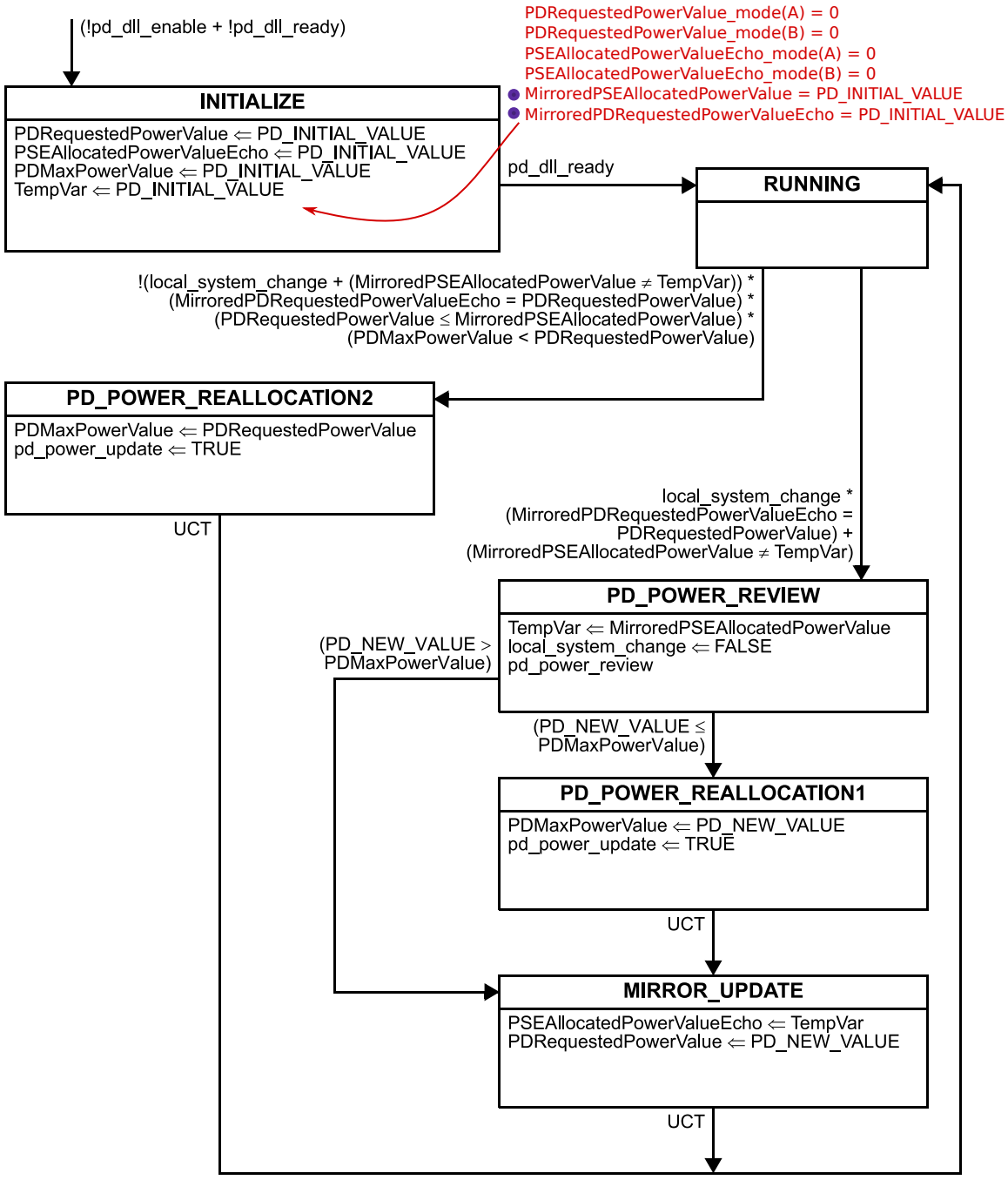

Figure 145–41—Single-signature PD power control state diagram

145.5.3.6 PSE power control state diagrams (dual-signature)

Add the following text to this empty subclause:

This state diagram controls the PSEAllocatedPowerValue_alt(X) variables, which are used to allocate power to the

individual Modes of a dual-signature PD. These variables and the corresponding fields in the LLDPDU are used for power allocation when the connected PD is a dual-signature PD that is supplied in 4-pair mode.

Insert new subclause 145.5.3.6.0a below 145.5.3.6 as follows:

145.5.3.6.0a Alternative designation

PSEs providing power to a dual-signature PD operate over two semi-independent state diagrams, one for Alternative A, another for Alternative B. Alternative information is obtained by replacing the X in the desired variable or function with the letter of the Alternative of interest. Alternatives are referred to in general as follows:

X

Generic Alternative designator. When X is used in a state diagram, its value is local to that state diagram and not global to the set of state diagrams.
Values:

A: Alternative A
B: Alternative B

P

Powered Alternative designator. When P is used in a state diagram, its value is local to that state diagram and not global to the set of state diagrams. "P" refers to the Alternative that is currently powered. It's value is only defined when the PSE operates in 2-pair mode.
Values:

A: Alternative A
B: Alternative B

145.5.3.6.1 Variables

...

Dual-signature PSEs provide the behavior of the state diagram shown in Figure 145–39 over each pairset independently unless otherwise specified. All the parameters that apply to Alternative A and Alternative B are denoted with the suffix "_alt(X)" where "X" can be "A" or "B", as defined in 145.5.3.6.0a. A parameter that ends with the suffix "_alt(X)" may have different values for Alternative A and Alternative B.

Info (not part of baseline)

We are using the shorthands 'twopairmode' and 'fourpairmode' in the PSE state diagrams. These are defined below. Note that the $\wedge$ symbol denotes boolean XOR as defined in 21.5.4.

Add the variable / alias to the variable list as follows:

- twopairmode: Alias for the following term: (alt_pwrd_pri $\wedge$ alt_pwrd_sec)
- fourpairmode: Alias for the following term: (alt_pwrd_pri * alt_pwrd_sec)

Info (not part of baseline)

There are a bunch of statements "When a PD mode is not active, the value is set to zero." and "When a PD mode is not active, the value shall be set to zero." that do not belong in the variable section.

Remove the following statements from 145.5.3.6.1:

- When a PD mode is not active, the value is set to zero.
- When a PD mode is not active, the value shall be set to zero.

145.5.3.6.3 State diagrams

Change Figure 145–43 as follows:

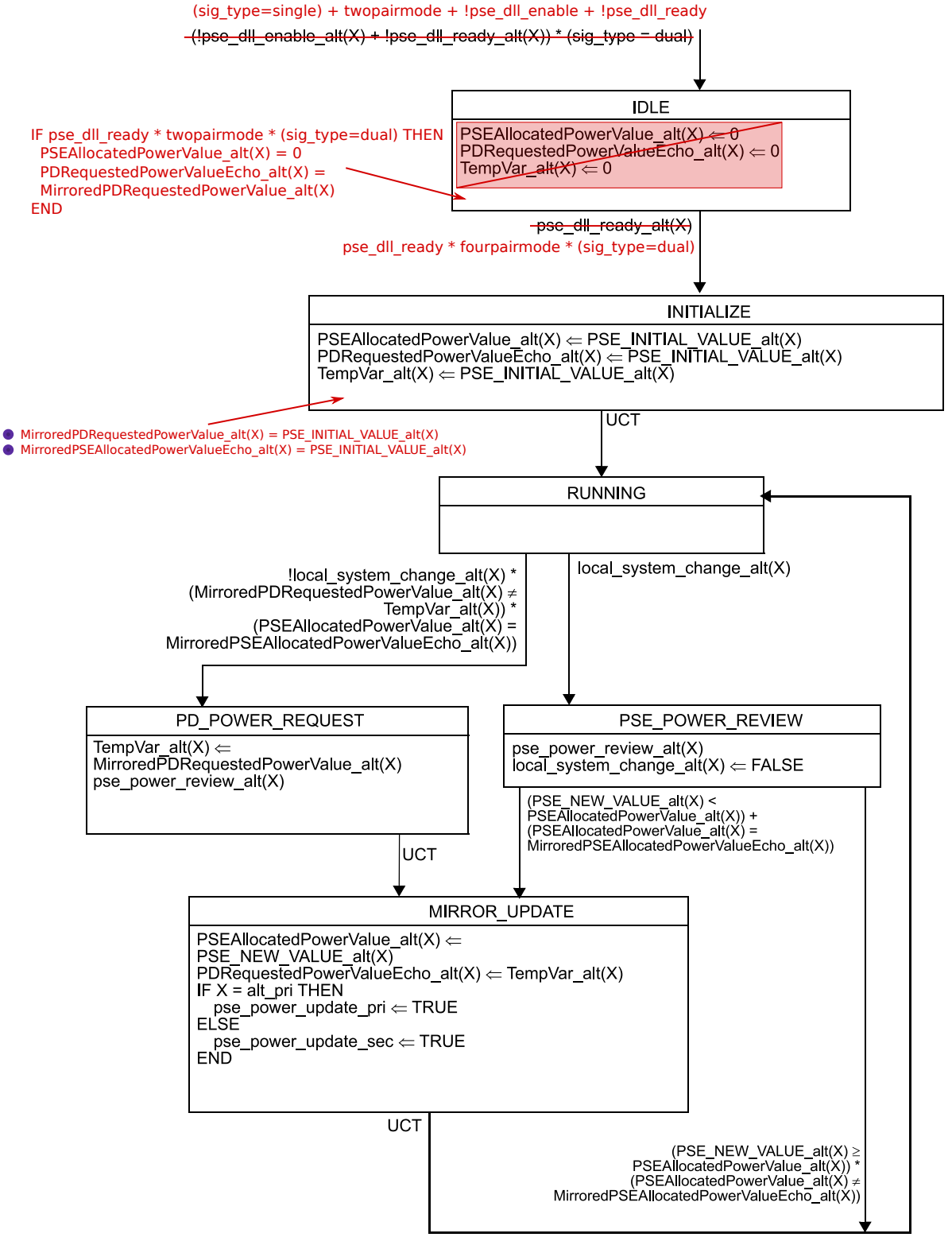

Figure 145–43—PSE power control state diagram for dual-signature PDs in 4-pair mode

Insert Figure 145–43a as follows:

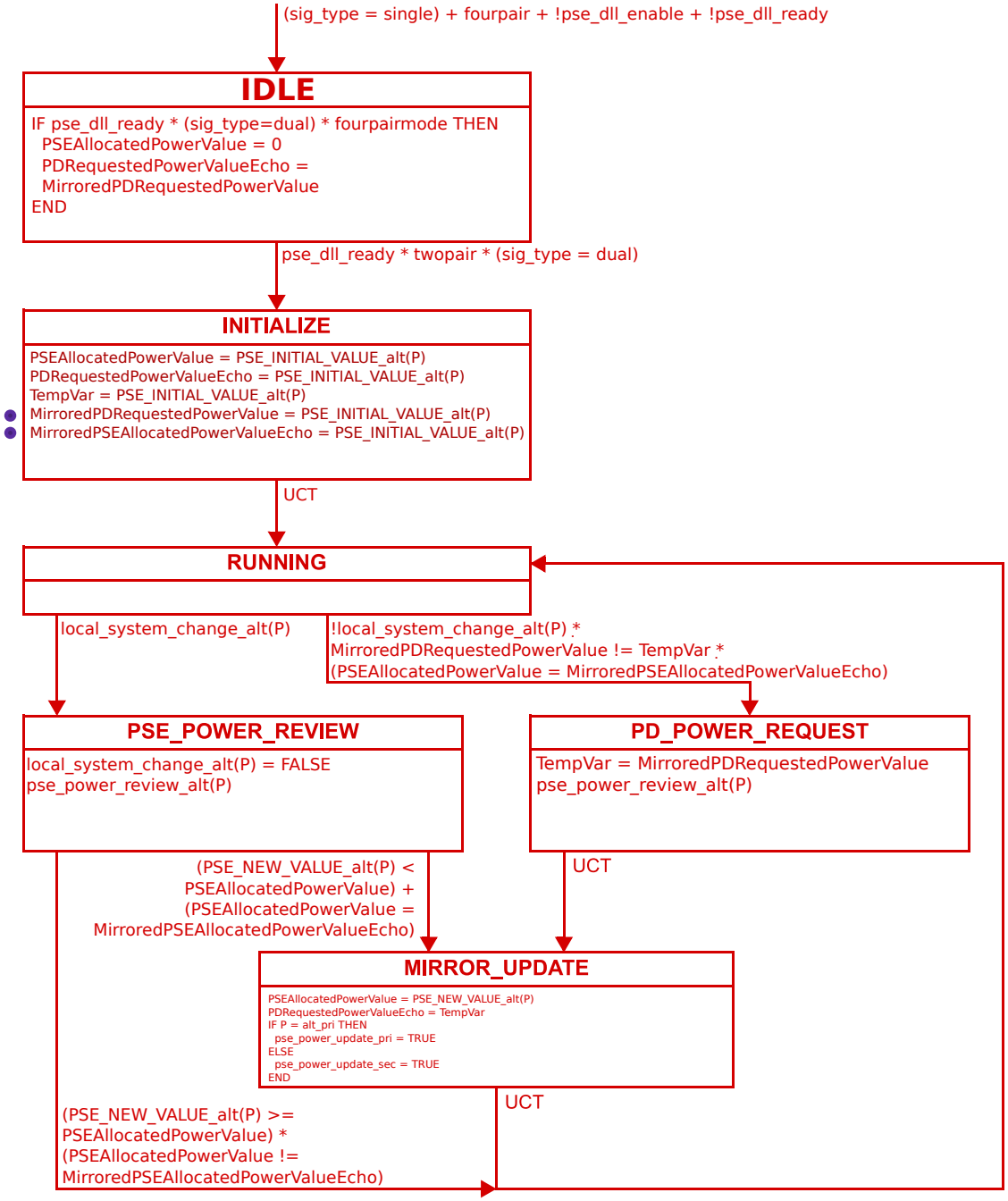

Figure 145–43a—PSE power control state diagram for dual-signature PDs in 2-pair mode

145.5.3.7 Dual-signature PD power control state diagrams

Add the following text to this empty subclause:

This state diagram controls the PDRequestedPowerValue_mode(X) variables, which are used to allocate power to the individual Modes of a dual-signature PD. It is applicable when the PD is a dual-signature PD that is supplied in 4-pair mode.