Energiebetriebene-Produkte-Richtlinie der Europäischen Union (EbP-RL)

Arbeitshilfe zur Auswertung der Vorstudie zu <u>Los 6</u> Leerlaufverluste (standby and off mode losses) – <u>Begriffsbestimmungen</u>

Die Vorstudie enthält rund 55 Begriffsbestimmungen.

Energy Using Products-Directive of the European Union (EuP-Directive)

Help for the use of the preparatory study <u>Lot 6</u> standby and off mode losses – <u>definitions</u>

The prepatroy study contains about 55 definitions.

Directive d'écoconception applicables aux produits consommateurs d'énergie

Aide à l'utilisation d'ètude sur <u>lot 6</u> (mode veille et arrêt) – <u>définitions</u>

0 Watt off-mode
This mode defines the condition, in which the EuP is connected to a power source but not drawing energy. The common terms "hard-off", "primary side hard-off switch" or "galvanically switched off" may apply to this definition as well. In reality, "near zero watt off-mode" can also apply, if for example the losses in the mains cables are very accurately measured.

Active mode
This mode defines the condition, in which the EuP is connected to a power source, has been activated and provides one or more main functions. The common terms "on", "in-use", "normal operation" may apply to this definition as well.

active mode, Lot 6 ~ → Lot 6 active mode

capability, network ~ → Network / network capability

communication, Network integrity ~ →Network integrity communication

consumption, standby energy ~ → Lot 6 standby & Lot 6 standby energy consumption

control reactivation, Remote ~ → Remote control reactivation

cycle, Function~ → Function cycle

Disconnected
When all connections to power sources are removed or interrupted (e.g. via an external switch) the EuP is considered as disconnected.

Disconnected mode
This mode defines the condition, in which all connections to power sources of the EuP are removed or interrupted. The common terms "unplugged" or "cut off from mains" may apply to this definition as well.

display, status ~ → Information or status display functions

Function
A function is a predetermined operation triggered by an interaction (of the user, of other technical systems, of the system itself, of a measurable input from the environment).
A set of related functions needed to operate one aspect of a product is often called functionality. A simple example functionality is a clock, which needs functions for clock display, the actual clock drive or circuit and functions to set the clock.

Function cycle
A set of predetermined or programmed functions running sequentially and making up the intended use (or service) of a product. The function cycle may also be termed a job. A function cycle may be influenced by sensory data or may be overruled by intervention of the user.

function, display ~s → Information or status display functions

function, Main ~s → Main functions

function, Sensor-based safety ~ → Sensor-based safety function

Hard switch
A switch, which galvanically disconnects (or connects) the electric lines.

hard switch, Primary side ~ → Primary side hard switch

hard switch, Secondary side ~ → Secondary side hard switch

Information or status display functions

Displays might be active, which are not by themselves main functions, such as a clock. The same display can of course have additional functions in active mode. Also status displays (e.g. charge state or connectivity) are included, unless the only feature would be to indicate the state of the EuP without any other functionality. A LED showing that a soft switch is in the "off position" would not change the classification as off-mode.

Information storage (volatile memory)

Information storage in this context refers to memory types, which continuously or periodically need electrical energy to keep the stored information intact. This is also known as volatile memory. The typical example would be RAM memory, which is "refreshed" by reading and rewriting the information periodically. Components, which do not need energy for keeping the information intact, are not considered, such as flash memory or hard disk drives.

integrity, Network ~ → Network integrity communication

Lot 6 active mode

When one or more main functions are active, the EuP is considered to be in active mode. Different modes for different parts of a product shall not be regarded. Each device in its entirety should either be considered as being in standby mode, off-mode or active mode. If one part of a product is active to fulfil one or more main functions, all energy consumption from that phase will be outside the scope of this study.

Lot 6 standby *(siehe auch Lot 6 standby & Lot 6 standby energy consumption)*

This mode defines the condition, in which the EuP is connected to a power source, draws energy and offers a selection of the following reactivation and continuity functions:
-   Reactivation function provided by soft or hard switch, remote control, internal sensor, timer, or network command,
-   Continuity function: information or status displays including clocks,
-   Continuity function: information storage (volatile memory),
-   Continuity function: sensor-based safety functions,
-   Network functions limited to network integrity communication.

When at least one network function is available (reactivation via network command or network integrity communication) the mode is called Lot 6 networked standby, otherwise Lot 6 passive standby. This set of functions is defining the spectrum of Lot 6 standby and the associated energy consumption. The common terms "passive standby" and "active standby low" (e.g. IEC 62087) may apply to this definition as well.

To base the definition on functions is also important for the later analysis of design measures, which will need to address two main issues:
-   Functions offered / modes to be realised with a minimum amount of energy consumption
-   (Re)activation functions, automatisms and the time duration of modes.

The conscious choice of the functions active in standby, or the choice to offer a mode without any function sets the baseline for the Lot 6 energy consumption of a product.

Lot 6 standby & Lot 6 standby energy consumption *(siehe auch Lot 6 standby)*

An EuP is considered to be in Lot 6 standby mode, when it is connected to a power source and offers a reactivation function (remote reactivation, self reactivation or switch

reactivation). Additional functions, which may be active and consuming energy, are the following continuously running functions
- information or status display, such as displaying the time,
- information storage needing continuous energy supply,
- sensor-based safety functions,
- network integrity communication.

In addition to the reactivation possibilities a deactivation function (from standby to a lower standby or from standby to off-mode) may be offered. The above function types shall be termed Lot 6 standby functions. The associated energy consumption is the Lot 6 standby energy consumption.

Main functions
Main functions (also often called primary functions) are those, which in combination represent the intended service of the EuP, for which the EuP is acquired. An EuP may have more than one main function (esp. multifunctional devices) and a function may consist of more than one phase of operation (i.e. a function cycle).

main part of the EuP, Reactivation on ~ → Reactivation on main part of the EuP

mode, Disconnected~ → Disconnected mode

mode, Lot 6 active ~ → Lot 6 active mode

Network / network capability
Networks in this context are information / communication networks: telephone networks, internet and other computer networks, TV broadcasting networks (the latter are usually unidirectional networks). Device-to-device connections (such as SCART) can also provide network capability.
Energy networks are always given their full name (e.g. electricity network, gas supply network).

Network integrity communication
Minimal network communication needed to maintain network integrity, i.e. a periodic short burst of status data.

network reactivation, Remote ~ → Remote network reactivation

Networked standby
When the EuP is in Lot 6 standby according to "Lot 6 standby & Lot 6 standby energy consumption" and offers either a remote network reactivation and/or network integrity communication, then the product is considered to be in networked standby mode.

network, Type I ~ → Type I (network), "Simple network"

network, Type II ~ → Type II (network), "Standard range network"

network, Type III ~ → Type III (network), "High speed network"

off, Transition to ~ → Transition to standby/off

off-mode
from the energy supply during that time shall be considered as off- mode losses. If no energy is used, the product is in "0 W off-mode".

off-mode, ~ 0 W   → Off-mode; off-mode losses, 0 W
                       → 0 Watt off-mode

Off-mode; off-mode losses, 0 W
An EuP is considered in off-mode, when it is connected to a power source but is not offering any function to the user.2 All energy drawn

Off-mode with losses
This mode defines the condition, in which the EuP is connected to a power source, and is drawing energy although not providing any function (for completeness a switch on the main part of the EuP has to be allowed as a function). All energy drawn from the energy supply during that time shall be considered as off-mode losses. The common term "lowest power consumption" could apply to this definition as well, although it should preferably be differentiated between "lowest mode offering no function" and "lowest mode offering a function". Another common term would be "soft off". Offmode with losses is indeed most often caused by soft switches, secondary side switching or by external power supplies staying in a no-load condition. However, also other product configurations can lead to off-mode losses, where no function is offered.

off-mode, ~ losses → Off-mode; off-mode losses, 0 W

off-mode, Transition to ~   → Transition to standby and off-mode
                                → Transition to standby/off

on, Transition to ~ → Transition to on

Passive standby
Otherwise (Lot 6 standby determined according to "Lot 6 standby & Lot 6 standby energy consumption") the mode shall be termed passive standby mode.

Preheating
Preheating is used to describe functions, which continuously keep part of the EuP or of media within the EuP at an elevated temperature. This is done to achieve a faster reactivation time. The energy demand may in practice be periodic or sensor controlled, but the preheating function is nevertheless continuous.

Primary side hard switch
A hard switch, which galvanically cuts off all electric energy input at the mains level to the EuP. Sometimes "hard off switch" is used for this configuration as well (but this should not include secondary side switches).

Reactivation
A function, which allows to switch the EuP from standby or off-mode into one of the active modes. Reactivation functions can be triggered by the user or from a connected technical system.

Reactivation on main part of the EuP
In contrast to remote reactivation, this case covers only switches located on the main part of the EuP and operated by the user. Although a remote control is part of the EuP "as delivered", it is never the main part of the EuP.

reactivation, Remote ~ → Remote reactivation

reactivation, Remote control ~ → Remote control reactivation

reactivation, Remote network ~ → Remote network reactivation

reactivation, Self ~ → Self reactivation

Remote control reactivation
Reactivation by pressing a switch on a remote control. Remote control is understood to use wireless transmission of the command, such as via infrared or radio frequency.

Remote network reactivation
Reactivation command or signal received via a network connection. In the context of computers also called wake-up over network or wake-up on LAN.

Remote reactivation
Either remote control reactivation or remote network reactivation.

safety, Sensor-based ~ → Sensor-based safety function

Secondary side hard switch
A hard switch, which is located after the power transformation (internal or external power supply).

Self reactivation
A reactivation, which is initiated by the EuP itself, i.e. through an integrated sensor or a timer.

Sensor-based safety function
A continuously running sensor circuitry necessary to monitor safety related status of the product or the environment (unless the sensing is the main function of the EuP). Examples: Heat sensor to warn against hot cooking plates or water leak sensor in washing machines.

Soft switch
A switch, which is monitored by an analog or digital circuit, which then in turn activates or deactivates an electronic power switch or for example a relay.

standby , Networked ~ → Networked standby

standby, Lot 6 ~ energy consumption → Lot 6 standby & Lot 6 standby energy consumption

standby, Lot 6 ~   → Lot 6 standby
                         → Lot 6 standby & Lot 6 standby energy consumption

standby, Passive ~ → Passive standby

standby, Transition to ~   → Transition to standby and off-mode
                                 → Transition to standby/off

status, ~ display → Information or status display functions

storage, Information ~ → Information storage (volatile memory)

Switch
User interface element to connect or disconnect electric lines. In the context of this study, switches are always power switches, which directly or indirectly change the power distribution to or within the EuP.

switch, Hard~ → Hard switch

switch, Primary side hard ~ → Primary side hard switch

switch, Secondary side hard ~ → Secondary side hard switch

switch, Soft ~ → Soft switch

Transition to standby/off *(siehe auch Transition to standby and off-mode)*
When a request to go into standby or off-mode is triggered – either manually or electronically – the EuP may go through a series of transitional modes before reaching a standby mode or off-mode (unless an activation request breaks the sequence). Transitional modes are handled according to the above definition: when only "Lot 6 standby functions" are active, the product is considered in standby mode, otherwise the transitional mode is still a part of the active operation.

Transition to standby and off-mode *(siehe auch Transition to standby/off)*
This mode defines the condition, in which the EuP is connected to a power source, has been activated previously by any means (switch, remote control, timer, etc.), and has been manually or automatically switched to a reduced set of functions, in order to either be reactivated soon after or to traverse into lower power modes after some time. Transitional modes are handled according to the above definition: when only "Lot 6 standby functions" are active, the product is considered in standby mode, otherwise the transitional mode is still separate, or counts as a part of the active operation. The EuP should however switch as fast as possible to a Lot 6 standby or off-mode. The common terms "energy save mode", "ready", "idle", "sleep" may apply to this mode as well. Furthermore, we will subordinate "active standby high" (i.e. unsupervised download of electronic program guides according to IEC 62087) in this condition.

Transition to on
When a request for a main function is triggered – either manually or electronically – from a standby or off-mode, it may take some time before the EuP provides its main function(s). This "transition to on" phase will not be part of standby or off-mode, starting from the time of the trigger event.

Type I (network), "Simple network"
Analogue signalling and signal detection4, and low speed connections (< 0.5 Mbps or < 5 MHz, such as IrDA or a phone line without DSL).

Type II (network), "Standard range network"
Standard data networks, lower speed wireless and non-continuous broadcast reception.

Type III (network), "High speed network"
Data networks (Gbps range or > 500 MHz), higher speed wireless (all WLAN types) and continuous broadcast reception.