Information bulletin

Power supply / battery charger standards

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This information bulletin is to assist in understanding of the correct relevant standard to apply to power supplies and battery chargers (low voltage in scope electrical equipment) based on the definition and relevant standards listed in AS/NZS 4417.2.

It does not place requirements on the Class III (extra low voltage) equipment used with the power supply or battery charger, but rather clarifies what relevant standard should be applied based on the Class III equipment the power supply or battery charger is to be used with.

Requirement

Power supply

1. Power supplies supplied alone (not supplied with specific equipment) are power supplies for general use:
   - Relevant safety standard is AS/NZS 61558.2.6 and for switch mode power supplies AS/NZS 61558.2.16.

   Certificate does not need to specify any particular Brand or Type of equipment the power supply is to be used with.

   NOTE: also applies to power supplies not designated as for use with specific electronic (ITE, audio, video) equipment – see point 3.

   For example: a general use power supply sold by itself in a separate package. The certificate will not need to specify any particular brand or type of equipment the power supply is to be used with. The instructions will provide detail as to intended equipment it will be used with and any general requirements for use as per AS/NZS 61558.2.6 or, if for switch mode power supplies, AS/NZS 61558.2.16.

2. Power supplies provided with specific class III equipment that are appliances covered by AS/NZS 60335 series standards are power supplies for appliances – that is they are part of appliances with ‘class III construction with detachable power supply part’ (that is the brand and type - as identified in instructions provided with power supply and as listed on the certificate):
   - Relevant safety standard is the relevant AS/NZS 60335 series standard for the appliance (the power supply with the class III appliance being tested together to AS/NZS 60335.1 and the relevant part 2).

   Certificate to specify the Brand and Type of equipment the power supply is to be used with.

   For example: a power supply provided with a ‘uno’ brand class III fan of various models. The certificate would specify ‘for use with uno fans’.

EESS Electrical Equipment Safety System

Note: In this example the detachable class III fan (with or without battery) by itself is out of scope of EESS as it is extra low voltage. Out of scope equipment is not included in this document. The power supply (in this situation it is a power supply as it recharges batteries inside the appliance so not a battery charger that charges batteries taken out of appliance and connected to/placed on/in the battery charger) is a level 3 power supply in EESS – AS/NZS 4417.2 now clarifies if the power supply is for an appliance then the standard is: *Power supply for appliances – AS/NZS 60335.1 and the relevant part 2 of the series.* Power supply must be certified and registered – in this example tested and certified to AS/NZS 60335.1 and AS/NZS 60335.2.80 – with the class III fan part included in that assessment as required by AS/NZS 60335.1.

3. Power supplies provided with specific electronic (ITE, audio, video) equipment are power supplies for use with specific electronic equipment (brand and type - as identified in instructions provided with power supply and as listed on the certificate):
- Relevant safety standard is AS/NZS 60065 or AS/NZS 60950.1 (until they are superseded by AS/NZS 62368.1) or AS/NZS 62368.1.

Certificate to specify Brand and Type of equipment the power supply is to be used with.

For example: a power supply for use with a ‘duo’ brand class III desktop speaker of various models. The certificate would specify ‘for use with duo speakers’.

4. Power supplies provided with equipment that is lighting equipment, or any power supply identified as a ‘lamp control gear’ (even if not supplied with specific lighting equipment), are power supplies for lighting purposes (brand and type of lighting equipment - as identified in instructions provided with power supply and as listed on the certificate):
- Relevant safety standard is:
  a. Electronic types:
     i. Light emitting semiconductor driver — AS/NZS 61347.2.13
     ii. Other—AS/NZS 61347.2.2
  b. Ferromagnetic type:
     i. AS/NZS 61558.2.6.

Certificate to specify the Type of equipment the power supply is to be used with (and if supplied with other equipment the Brand of that equipment)

For example: a power supply sold that is for use with ‘Tre’ brand class III lighting equipment. The certificate would specify the different type of lighting equipment relevant to the standard certified such as:

Electronic LED driver: ‘for use with Tre LED lighting equipment’
Electronic other: ‘for use with Tre electronic lighting equipment’
Ferromagnetic type: ‘for use with Tre non-electronic lighting equipment’

For example: a power supply sold that is for general use with class III lighting equipment. The certificate would specify the different type of lighting equipment relevant to the standard certified such as:

Electronic LED driver: ‘for use with LED lighting equipment’
Electronic other: ‘for use with electronic lighting equipment’
Ferromagnetic type: ‘for use with non-electronic lighting equipment’

Battery Charger

5. Battery charger supplied alone:
- Relevant safety standard is AS/NZS 60335.2.29.

Certificate to specify the type of batteries intended to be charged by the battery charger as required in clause 7 of AS/NZS 60335.2.29

For example: ‘For use with lead acid batteries’ or ‘For use with NiCad batteries’

NOTE: this also covers battery chargers supplied to charge battery packs that are taken out of appliances (for example power tools) or lighting products to be charged. In this instance the certificate may also list (and it may be beneficial to do so) the Brand and Type of appliance or battery pack model it is to be used with.
NOTE: also applies to battery chargers not designated as for use with specific electronic (ITE, audio, video) equipment – see point 6.

6. Battery charger provided with specific electronic (ITE, audio, video) equipment;
- Relevant safety standard is AS/NZS 62368.1 or AS/NZS 60335.2.29.

If using AS/NZS 62368.1 the Certificate to specify Brand and Type of equipment the battery charger is to be used with.

For example: If certificate lists AS/NZS 62368.1 as the relevant standard and it is for a battery charger for use with a ‘duo’ brand camera of various models that has a removable battery for charging. The certificate would specify ‘for use with duo cameras’.

Additional requirement

7. Clarification of difference between power supply and battery charger:

- A power supply is a device that provides a supply to other class III (ELV) equipment for the class III equipment to operate, it may also charge batteries that are, and remain, internal to class III equipment when being charged. Unless the power supply is for general use it is considered to be a power supply for use with specific equipment (and that class III equipment must be stated in instructions and on any certificate),

- A battery charger is a device that provides supply to charge batteries when the batteries are, or can be, external to the equipment. This may include where the battery is inserted into the battery charger for charging, or placed on the battery charger for charging, or the battery charger has leads to connect to the battery for charging, or the battery charger has an output for a lead to be connected to then connect to the battery. A battery charger may be for use to charge any battery type as marked on the battery charger.

8. A device to charge accessible batteries in vehicles that may be charged in the vehicle would be a battery charger to AS/NZS 60335.2.29. Example of such vehicles being cars, motorbikes, ebikes, scooters, boats (this does not include chargers for EV batteries).

9. Devices cannot be both a battery charger and a power supply.

10. Some power supplies or battery chargers or connected devices may have other features or risks that need to be assessed and may require additional safety standards applied (depending on the identified features or risk). While not part of the power supply as such, Electrical Safety Regulators would draw attention that this may need to include having the power supply supplied with specific class III equipment tested with the brand and type it is supplied with (to be connected to), to ensure any internal battery parts have adequate protection circuits.

11. A power supply not supplied with electronic (ITE, audio, video) equipment cannot be classified as a power supply for use with specific electronic equipment unless the instructions for use and certificate list the brand and type of class III electronic (ITE, audio, video) equipment it is for use with (and see also point 10 related to testing power supply and specified class III equipment together).

12. For power supplies the certificate issued and detail uploaded onto EESS certification database must include details of the brand(s) and type(s) of the class III equipment the power supply is to be supplied with as listed above. This detail uploaded on the EESS certification database must be in a section that is visible when conducting a public search of certificate details.

13. EESS regulators may determine a different standard as a relevant standard to the above standards on a case by case basis.

Transitional arrangements

The following applies as a transition to the **Requirement** above to apply to power supplies already certified to AS/NZS 60065, AS/NZS 60950.1, AS/NZS 62368.1 that do not meet criteria in point 3 above (and so are power supplies within point 1 or 2):

- Subject to no safety incidents having occurred with the power supply, these power supplies can continue to be renewed to the standard (latest edition) originally certified to (if it is still a valid issued standard) for the life of that certification, including renewals. Additional (new) models shall not be added. Existing models can have minor modifications (for example change like for like components or add components from different supplier or change supply cord but not change of PCB or enclosure type or output ratings).

- When certification is renewed there must be indicated in instructions supplied with the power supply the brand(s) and type(s) of class III equipment it is to be used with, and certificate must list the brand(s) and type(s) of class III equipment the power supply is to be used with.

The following applies as a transition to the **Requirement** above to apply to battery chargers already certified to AS/NZS 60065, AS/NZS 60950.1, AS/NZS 62368.1 when they should be certified to AS/NZS 60335.2.29:

- Subject to no safety incidents having occurred with the power supply, these power supplies can be continue to be renewed to the standard (latest edition) originally certified to (if it is still a valid issued standard), for the life of that certification, including renewals. Additional (new) models shall not be added. Existing models can have minor modifications (for example change like for like components or add components from different supplier or change supply cord but not change of PCB or enclosure type or output ratings).

- When certification is renewed there must be indicated in instructions supplied with the battery charger the brand(s) and type(s) of equipment it is to be used with, and certificate must list the brand(s) and type(s) of class III equipment the battery charger is to be used with (or the class III equipment from where the battery is from).

Power supplies or battery chargers not yet certified (new applications) should meet the requirements of this information bulletin. However, for a period of 1 year after issue of this information bulletin, if the equipment already has test reports to the incorrect standards (listed in

this transition period section) then the transition arrangements for power supplies or battery chargers already certified (as listed above) may also be applied.

Background

Power supply and battery charger standards applied to equipment over time has developed without structure and there are now many safety standards being applied for certification based on the test reports supplied rather than the legislative intent.

The various safety standards (standards as developed to address safety issues related to the risks identified for the situations of use with specific equipment - e.g. appliances, ITE, Audio, Video, lighting equipment) are being applied based on what test report is supplied, rather than assessment of the stated use of the equipment, leading to inconsistent certification of power supplies and battery chargers and certification to inappropriate safety standard when taking into account the likely/designed use of the equipment.

Power supplies and battery chargers may have circuitry to control risks of the equipment/batteries connected to be charged or may require the equipment to have the circuitry to control the risk of the equipment/batteries to be charged. This reinforces the need to ensure the power supply or battery charger is appropriate for the equipment it is being used with and has been tested with the relevant equipment to address the safety risks (and the relevant standard actually addresses those risks), or is tested to the general power supply or battery charger standards.

Review of common standards currently being used for certification (including certifying power supplies that charge batteries that are external to the equipment – that is by definition not a power supply but classified as a battery charger) indicates the following:

- AS/NZS 62368.1 annex M confirms "*This annex does not cover equipment that charges external batteries*" – therefore this standard is only for charging batteries that are charged while inside the equipment – this statement appears to indicates that AS/NZS 62368.1 standard was not intended to be used for certifying a battery charger, however it is noted internationally this standard is being used for such purposes. This information bulletin allows use of AS/NZS 62368.1 as a standard to certify battery chargers in limited circumstances only. Responsible suppliers are cautioned to ensure the certified equipment will be electrically safe when used and has unambiguous instructions for use to ensure it is not used inappropriately or create an unsafe situation.
- AS/NZS 60950.1 does not have any assessment of a battery charger for charging external batteries – therefore this standard should not be used by itself for certifying a battery charger,
- AS/NZS 60065 has some criteria annex L (which is only for flash apparatus for photographic purposes), again it is only for charging batteries that are charge while inside the equipment – this standard should not be used by itself for certifying a battery charger.

This information bulletin is intended to give guidance and direction to the required safety standard to be applied, in line with standards listed in AS/NZS 4417.2 and what the relevant safety standards indicate themselves. This may appear to contradict safety standards listed in various equipment standards; however, it is noted these standards may overlap or conflict with other safety standards. Therefore, this bulletin was produced to provide a clarity and consistency of approach.

A transition period has been included to enable industry to move to the required safety standards.