

Dear Sir,

I would like to point out a serious deficiency in the design of the ETI-455 Loudspeaker Protector published in the March 1980 issue of ETI.

Protection circuits of this kind should be designed as far as possible to "fail safe". If the protection circuit fails,

- (i) it should not cause damage to the circuit being protected
- (ii) damage to the circuit being protected should be prevented, even while the protection circuit is failed
- (iii) warning should be given of the failure of the protection circuit.

While a failure of the Loudspeaker Protector will not cause damage to the loudspeakers, it will allow the speakers to be damaged and it will provide no warning that the protector has failed. Though this situation may appear no worse than not having the protector installed, the user is living in a fool's paradise having been lulled into a false sense of security by the presence of the protector. The first indication he is likely to receive of failure of the unit is a puff of smoke from his burnt out speakers!

While component failures and bad connections are possible failure causes for the protector, the most worrying cause of failure is a flat battery. The battery is permanently connected into the circuit (without switch), and it is stated that because of the low CMOS current drain the battery should last its shelf life. But how do you know when the battery needs changing — look for the puff of smoke from the speakers?

The most obvious way of making the speakers safe in the event of failure of the protector is to have the relay which controls connection of the amplifier to the speakers connected as a normally operated relay. Then a fault would cause the relay to drop out and open the amplifier-speaker connection. This would protect the speakers and provide warning of the protector failure (though there would still be some faults which could lock up the relay and prevent the protector from doing its job).

Unfortunately, the design as it stands using a battery as power supply is not suitable for continually holding in a relay. To provide best protection the Loudspeaker Protector would have to be mains powered and switched on with the amplifier. A delay of one to two seconds after switch-on before operation of the relay to connect the speakers, would protect the speakers from amplifier failure at switch-on.

David L. Craig  
Holland Park, QLD

# LETTERS

*Thank you for your comments on the ETI-455 Loudspeaker Protector Mr Craig, but there really isn't a "serious deficiency" in the unit, as you say, and I will let the designer, David Tilbrook, take issue on that score*

*Apart from the obvious first requirement of actually doing the job required, a project must be 'reproducible' — that is, a wide spectrum of readers, with differing construction capabilities, must be able to build the project and get it working with a minimum of fuss. This is especially true of relatively simple projects and/or projects having wide appeal.*

*Having made that clear, I'll let David answer your specific objections.*  
(Roger Harrison, Editor)

*When setting out to design this project, it was clear that it would have quite a wide appeal — as there was no commercial equivalent to do the job — and would probably be a 'beginning' project for many readers. It was for these reasons that I decided the circuit should be battery operated. Various protection schemes were considered actually, and rejected for reasons Roger Harrison has mentioned above — including 'signal powered' protectors, circuits powered from the amplifier's supply, etc.*

*Having chosen battery operation, the unit had to have minimum power consumption to obtain maximum battery life and this meant a 'normally off' relay. Whilst I agree with your sentiments expressed in (i), (ii) and (iii) in your letter Mr Craig, I cannot agree that the Loudspeaker Protector suffers from a "serious deficiency". Firstly, to check the battery one simply turns down the sensitivity control of the unit while using the amplifier at normal listening levels. If the relays operate, cutting off the speakers, the battery is obviously OK.*

*Problems arise if the Loudspeaker Protector is mains operated. One of the most likely times for an amplifier to go faulty is at the moment of turn on. Unless the Loudspeaker Protector has been turned on before the amplifier, it is totally useless as a protection device in this event.*

*With 'normally operated' circuits, a*

*fault condition can occur which 'holds on' the relay and it is fallacious to think that such a circuit is inherently "fail safe". Then again, 'normally operated' circuits are prone to somewhat more failures than 'normally off' circuits — undoubtedly, some of those failures will be of the undesirable type.*

*For the conditions under which the Loudspeaker Protector will be built and operated, I think it should do its job admirably.*  
David Tilbrook.

Dear Sir,

I have been a regular reader of ETI since it first hit the newstands. I would like to congratulate the staff at ETI on the facelift given the magazine since last June.

My favourite section is Sound. It helps compensate for the demise of your sister magazine, 'Hi-Fi and Music'. However, I have one main criticism of the Sound section in ETI — lack of editorial and reviews on Australian-manufactured hi-fi equipment. The same goes for other Australian electronics and hi-fi magazines, too.

Could I suggest that ETI set aside a page or two for editorial and reviews on locally-made equipment?

Yours Faithfully  
R.D. Rowlands  
Koolan Island, W.A.

*We'd be delighted to do that. However, the pages would be blank for most issues of the year! There are not too many companies producing hi-fi equipment in Australia. We have already reviewed the locally-made "Sirius" loudspeakers from the Philips organisation and have several other pieces of equipment "in the pipeline". From time to time we publish items on Australian-made hi-fi equipment in the "Sound News" pages — keep reading, items of interest will pop up in the future.*

*If any Australian manufacturers out there would care to submit equipment for review, we'd only be too happy to hear from you.*

Dear Editor,

I just loved the April catalogue — but what you had wrapped round it was terrible!

D. Smith  
North Ryde, NSW