Australian Business Awards 2023

OE Elsafe PTY

TUF-R

A “USB Device Charging Module” designed to reduce waste in the commercial space ”

Product Entry for

The Australian Business Award for Product Innovation (ECO)

THE AUSTRALIAN BUSINESS AWARDS ®

ABA100 ECO INNOVATION WINNER 2023

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APPENDICES

EXECUTIVE SUMMARY

OE Elsafe Australia and its parent company OE Electrics in the UK have 35 years of experience in powering commercial spaces. OE have become the global leaders in the design and manufacture of power and data distribution modules, cable management, and soft wiring solutions. OE Elsafe is committed to excellence in products, services, and support.

Our manufacturing processes conform to:-

- ISO 9001; 2015 Approved Quality Management Systems.
- ISO 14001; 2015 Approved Environmental Management Systems.

OE Elsafe has embedded continuous improvement policies that drive the development and implementation of sustainable solutions in our business practises to reduce our impact on the environments in which we operate.

Commercial spaces need power for end-user laptops and mobile phones. This power is almost always provided as a combination of AC power sockets and USB charging ports, which until now came as a single moulded product. (Monobloc)

AC power sockets are a '50-year technology' with very little evolution; however, USB charging technology changes every few years as end users upgrade their laptops and mobile phones.

The challenge was given to our Research and Development team, who designed a commercial-grade solution that addressed the different life expectancies of AC sockets and USB charging ports.

The resulting TUF-R USB charging module offers an eco-friendly option that is designed for ease of maintenance, ease of use and significantly reduces waste.

PROFILE – TUF-R Power Modules

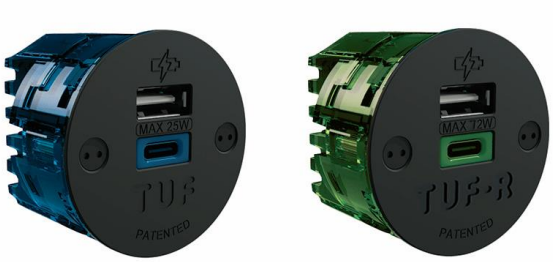
TUF-R is a compact yet powerful, field-replaceable USB A+C laptop and mobile fast charging module designed and developed by OE Elsafe.

TUF-R modules come in two profiles and are designed to fit most OE Elsafe products to provide device charging in the commercial space. TUF-R modules can be integrated into OE Elsafe desktop power rails, table boxes, commercial furniture and can also be panel mounted.

TUF-R has been designed to be eco-friendly with unique features that significantly reduce waste. The design features that make this possible are:-

- Modular Product Design
- TUF-R, Replacable
- Reversible Type A Port

Replacing just the TUF-R USB charging module and not the whole product extends the life of the product TUF-R is fitted into, saving time, resources and reducing waste.



TUF-R Canister

TUF-R Canister Replacement Tool

Click to see how easy it is to replace the TUF-R Canister Module

TUF-R QF5 Tiles

TUF-R QF5 Tile Replacement Tool

Click to see how easy it is to replace the TUF-R Tile Module

FEATURES

TUF-R is a compact yet powerful USB A+C laptop and mobile fast charging module. TUF-R will fit most OE Elsafe products increasing their functionality, extending their life and reducing waste.

TUF-R UNIQUE ECO-FRIENDLY DESIGN FEATURES INCLUDE :-

Modular

OE Elsafe's unique modular design enables the quick upgrade or replacement of a damaged TUF-R module, extending the life of the product it is fitted into. The modular design also ensures the end user can tailor solutions that are 100% suited to their needs with minimal waste.

Replaceability

TUF-R can be upgraded or replaced by anyone in less than five minutes. Facilities managers can replace the TUF-R module without needing to turn off the power or call an electrician. OE has designed a TUF-R replacement tool to ensure quick and simple replacement by anyone with the tool. (image page 6-7)

The Reversible Type A Port

TUF-R includes the world's first reversible Type A port to ensure a first-time connection every time. The USB A connector can be inserted both ways to streamline the end user's experience and cut down on wear or damage from incorrect attempts, maximising the working life of the power module. (image page 8)

ADDITIONAL ECO-FRIENDLY FEATURE :-

Intelligent Device Recognition for charging efficiency.

TUF-R includes Intelligent Device Recognition (IDR), enabling optimised charging rates for every individual device. TUF-R electronically communicates with laptops and mobile devices to deliver the optimum charge at the optimum rate for that device.

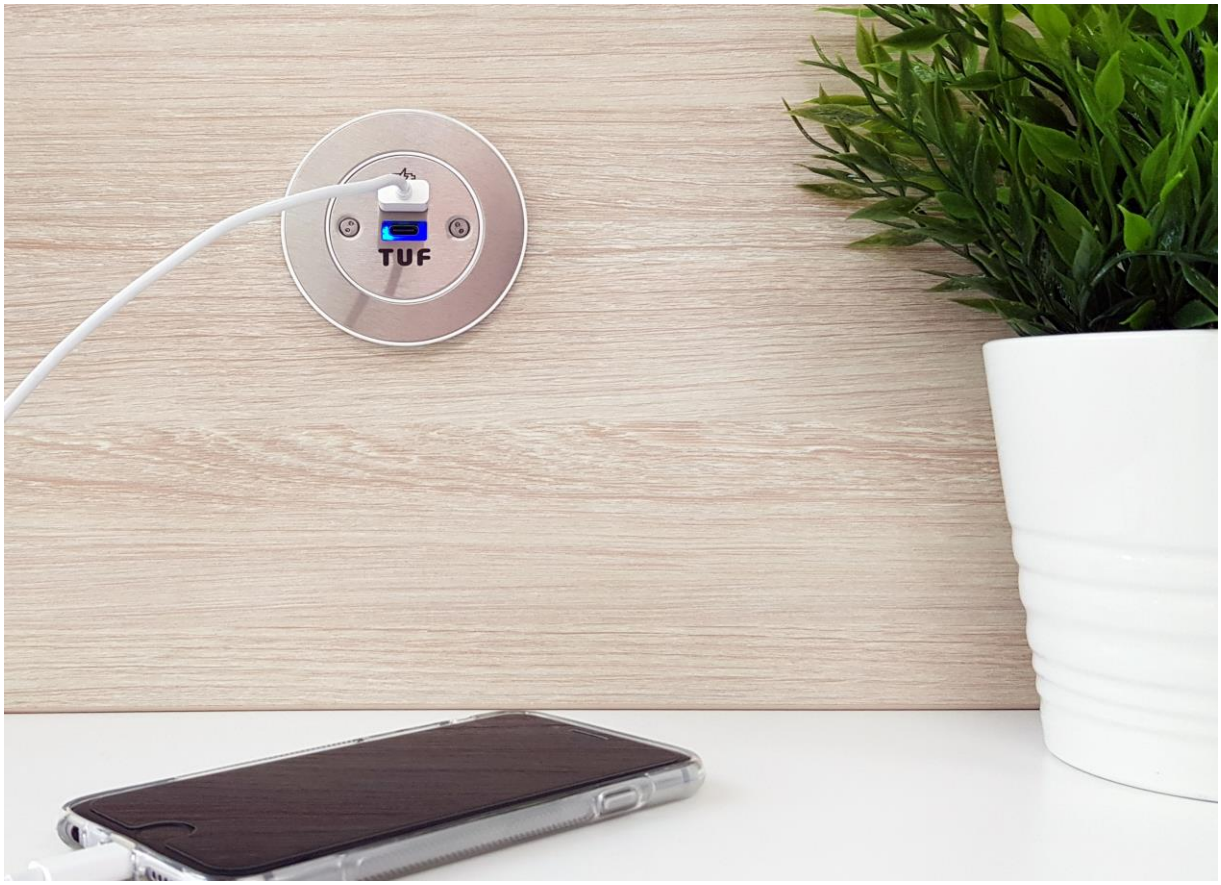
TUF-R – Click to view TUF-R Features

FEATURE IMAGES

TUF-R REPLACEABLE - Replace the "module" not the product

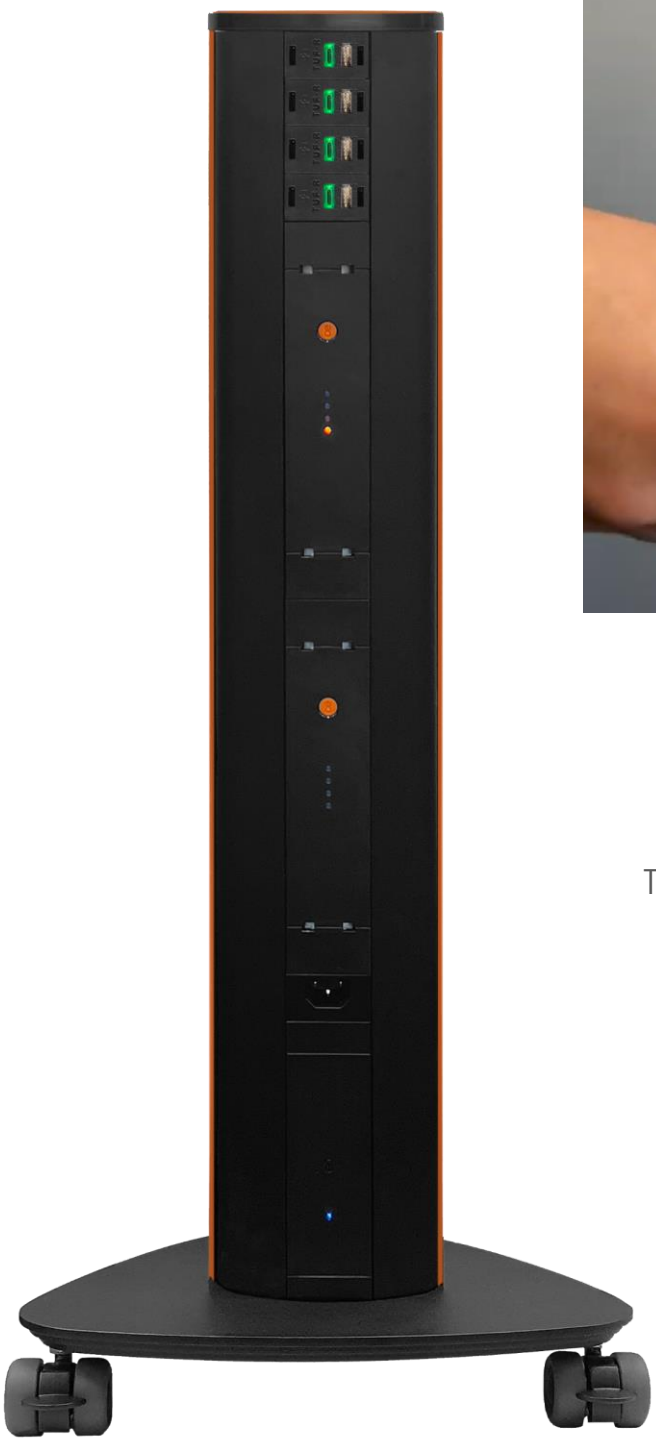
TUF-R Canister Replacement Tool. Removes the screws and the TUF-R canister.

Replaceable – Click to view the Pip panel mount TUF-R canister being replaced



FEATURE IMAGES

TUF-R REPLACEABLE - Replace the “module” not the product



TUF-R Tile Replacement Tool.
Removes the TUF-R Tile

Replaceable – Click to view the TUF-R module being replaced.

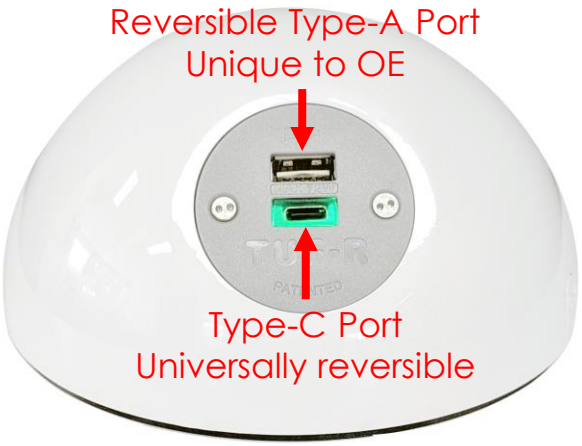
Replacing or upgrading just the TUF-R module, extends the life of the product it is fitted into indefinitely

FEATURE IMAGES

TUF-R REVERSIBLE Type-A Port - Extend the life of the product

A Reversible Type-A Port ensures a first-time connection every time. This cuts down on wear or damage from repeated and incorrect attempts, extending the working life of the module and the product it is fitted into

Reversible Type-A Port
Click to view the worlds first reversible type A port in action.



END USER

Commercial spaces are often high usage areas with many different end users coming and going during the course of the day. Products providing end user power to these spaces need to be robust to stand up to the rigours that are typical of high usage areas.

Commercial high use spaces include

- Education / TAFE / Universities / Colleges
- Public Spaces / Airports / Shopping Centres
- Workspace / Offices / Workshare Spaces
- Hospitality / Cafes / Hotels

Facility managers carry out as much repair and maintenance as they can, calling in contractors when needed. To replace or upgrade end user power products safely, an electrician is required. TUF-R modules are designed to be replaced safely by anyone without the need to call an electrician or turn off the power.

The modular design means a TUF-R cartridge can be changed onsite in less than five minutes saving time, money and reducing waste. The benefit to the facility and end user is almost no down time.

TUF-R includes the world's first reversible USB type A port to ensure a first time connection every time, streamlining the end user experience.

A first time connection reduces wear and damage from incorrect attempts extending the life of the module and the product it is fitted into.

OE have many projects worldwide where TUF-R is specified.

REPLACE THE MODULE NOT THE ENTIRE PRODUCT TUF-R Replacement Video

RESEARCH & DEVELOPMENT - Replaceable

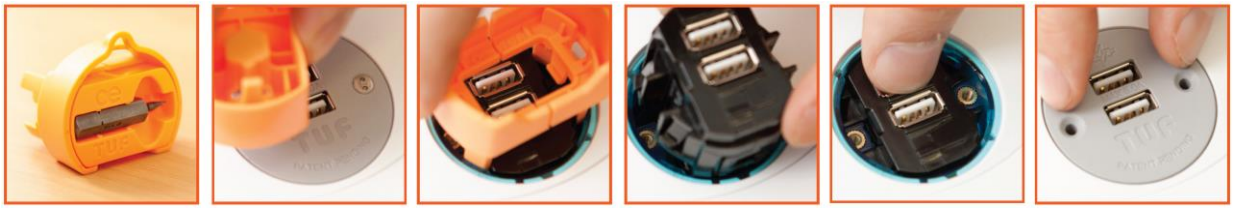
The OE Elsafe Research and Development team is constantly challenged to create new products and improve existing ones.

TUF was originally designed as a fixed component within the OE power range, which often saw entire products discarded just to upgrade or replace the damaged TUF USB charging part of the product. Additionally, USB charging was evolving very quickly, as mobile phone technology became more advanced and power-hungry. Within 5 years, USB power ratings increased from 0.5A, 1A, 1.5A, 2.1A, and 2.4A. Following that, USB C then brought along the new USB Power Delivery protocols with power up to 60 and then 100W with voltages ranging from 5 to 20V. We soon realised that, with these rapid technological advancements, we couldn't keep putting a USB charger next to a conventional mains socket and expect the unit to last for a sustainable amount of time.

We came up with the idea to make the USB charger a 'replaceable canister' instead of being built in. This could then be swapped out by a facilities manager to either replace a damaged unit or upgrade to a more powerful unit that supported current charging protocols.

The design challenged both the electronic and industrial design engineers. To make the unit compatible, it had to fit within the space of a conventional mains GPO socket. It also had to have an extra set of housings and contacts to allow it to be safely removed. A special, unique tool also had to be created to ensure that only authorised people could perform the changeover, an important feature when used in public spaces that are accessible to everyone. All of this left even less space to fit the electronics, which had to be miniaturised and optimised for maximum performance while producing minimal heat. New efficiency and heat dissipation techniques were developed and refined, and every possible cubic millimeter of space within the canister was used.

The resulting TUF-R module is the only modular USB charging option available In the commercial space in Australia that can be paired with an AC socket where both can be maximised without impacting the other.

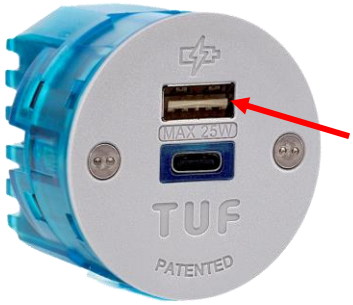


RESEARCH & DEVELOPMENT – Reversible Type A Port

At the same time as making these changes, we found the major failure point of most USB chargers was the USB tongue. Often, users would attempt to push in a USB plug the wrong way around, causing it to break off. We experimented with different types of plastic for this tongue, but they still kept breaking. We eventually settled on a novel design for a USB Type A port where the tongue was slightly flexible and sat in the middle of the port, allowing the USB plug to be plugged in both ways around. This meant it was impossible for the user to plug it in backwards and break it. We likened this design to a palm tree, which bends over in the strong winds rather than the rigid trees that tend to break in the storm.

This small but impactful feature update has significantly reduced the failure rate from accidental end-user damage, extending the life of the TUF-R module and product it is fitted into.

Previous TUF-R with tongue at top.
USB-A cable connectors can only be inserted one way.



R&D solution move the tongue to the middle so USB A cable connectors can be inserted both ways.

Incorporating both the replaceable canister and reversible USB Type A port, we feel we have created a USB solution for the future, where only a minimal amount of waste is created, and product life can be extended. TUF-R is now regularly specified for airports both here and globally, where the unique low maintenance feature has simplified the facility manager's workload and reduced costs.

Appendix and Supporting Media Links

WEB

https://www.oeelsafe.com.au/tuf-r/

VIDEO

TUF R Canister Replacement Video

TUF-R PROJECT – DARWIN AIRPORT

Darwin Airport TUF-R Project

TUF-R PROJECT – GENEVA AIRPORT

Geneva Airport Project

OE Elsafe products fitted with TUF-R modules. These provide end user power in commercial spaces.

TUF-R canister module fitted in the OE Elsafe PLUTO

TUF-R canister module fitted in PIP integrated panel mount power

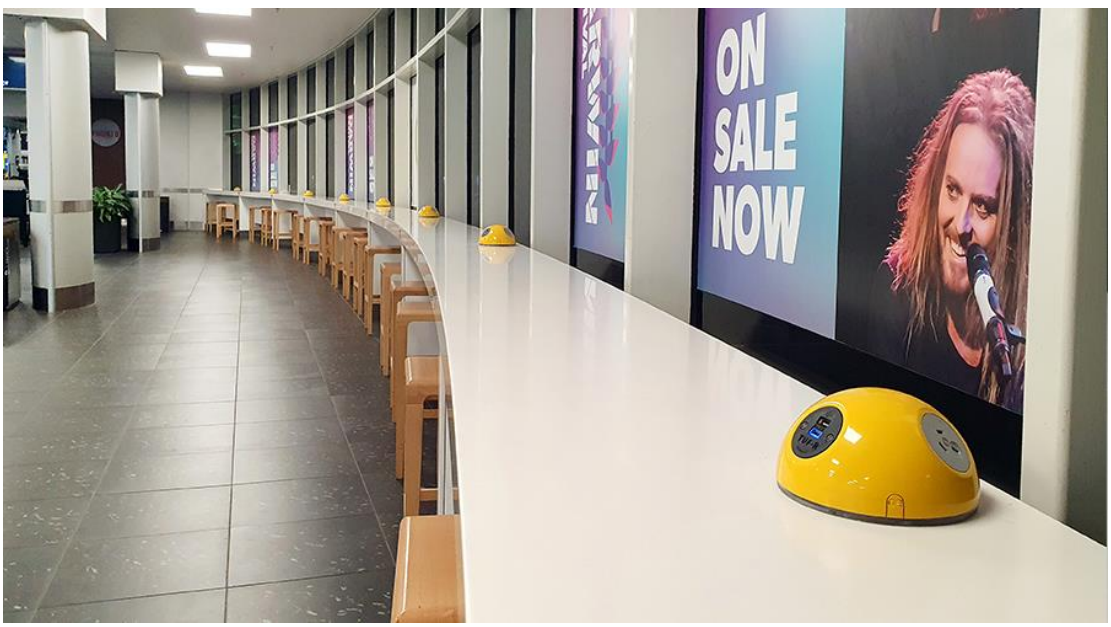
TUF-R canister module fitted in PHASE under mount power

TUF-R QF5 tile module fitted in an OE PACE power rail

Project – Darwin Airport
PLUTO guest power fitted with TUF-R USB charging modules

DARWIN AIRPORT have fitted PLUTO power units along the guest benchtops in the check in hall. They are fitted into a hole cut into the surface, secured and connected to mains power from below.

Should the TUF-R USB charging module need replacing the facilities manager can do this themselves, without removing the PLUTO or turning off the power. CLICK to view the Darwin Airport TUF-R Project



Project – Grosvenor Business Lounge in Sydney
Integrated PIP units fitted with TUF-R USB charging modules

The Grosvenor Business Lounge in Sydney is a "Third Space" where people can work when away from their own office. The workstations have integrated PIP units fitted with AC power sockets & TUF-R modules.

Should the TUF-R USB charging module need replacing the facilities manager can do this themselves, without removing the PIP product or turning off the power. Quick changeover means less down time.

Project (International) – Geneva Airport
PLANET power units fitted with TUF-R USB charging modules

Geneva Airport has installed PLANET power units between the seating rows to provide easily accessible guest power for laptops and mobile phones. PLANET is fitted with TUF-R USB charging modules.

Should the TUF-R USB charging module need replacing the facilities manager can do this quickly, without removing the PLANET units or turning off the power. CLICK to view the Geneva Airport TUF-R Project