

# MMI Exposed LIVE parts

## Multiple Mode Inverters with Back Up Ports

### Safety alert

Energy Safe Victoria has been made aware of several occasions where Licensed Electrical Workers (LEW) and Licensed Electrical Inspectors (LEI) have left the Back Up Port exposed by not fitting the supplied output connector.

### Hazard

A Multiple Mode Inverter (MMI) commonly contains a Back Up Port, some manufacturers may refer to this as an Emergency Power Supply (EPS) port. The Back Up output port commonly provides a 230 Volt a.c. output supply when the grid supply has been lost to maintain a fridge or lighting etc.

Some MMI's have the EPS port enabled by default, therefore the output port becomes live as soon as the MMI is energised and operational.

If the supplied output port connector is not fitted, the terminals of the Back Up port are left exposed.

### Potential Risks

Many of the output ports identified on MMI's pose a risk of electric shock without the supplied connector fitted by allow direct contact to LIVE parts.

The LEW and LEI must ensure that all terminals of any piece of equipment must comply with the minimum safety standards of AS/NZS 3000 to prevent access to live parts before being energised. Refer AS/NZS 3000:2018 Clause 4.1.2 (c)&(d).

### Requirements

LEW's must ensure that all parts, covers and connectors supplied with the product are fitted as per the manufacturers instructions, and that no exposed live parts or parts that may become live under normal operation exist.

LEI's must conduct a thorough prescribed inspection of the installation, and identify any unsafe situations, such as exposed live terminals.

Electrical Equipment that pose a risk of electric shock should not be installed and shall not be energised.

Refer to           The Electricity Safety Act 1998 section 43  
                          The Electricity Safety (General) Regulations 2019 Regulation 253 (c)  
                          AS/NZS 3000:2018 The Wiring Rules, Clause 4.1.2 (c)&(d)

### Description of the Issue

On a number of occasions it has been found that the EPS or Back Up port connector has not been fitted to the MMI as per the manufacturers instructions. This Leaves the terminals of the output port exposed, allowing potential direct contact to LIVE parts.

In some cases the output port socket is not IP2X and is enabled by default, therefore the exposed LIVE terminals allow a risk of electric shock, FAILING a standard finger test recording 242 V a.c. to earth.

The images below should the issue.



Image 1



Image 2



Image 3

**Image 1** - shows the exposed live terminals of an MMI with the EPS port connector left off by the installer.

**Image 2** - shows a standard finger test recording a FAIL result with 242 v a.c. tested at the exposed EPS pins with reference to earth.

**Image 3** shows the supplied EPS connector that must be fitted to prevent contact with the EPS port terminals. *Note: If the connector can be removed without the use of a tool, see below for additional guidance.*

Energy Safe consider the above situation as an installation issue as the manufacturer instructions have not been adhered to, which has created an unsafe situation.

Energy Safe will investigate and take enforcement action against the parties involved in any situation where an unsafe installation has been certified and energised.

An unsafe installation is where there is a risk of electric shock, fire or injury, caused by the installation under normal operating conditions.

## Additional Guidance on Non-Compliant MMI's

Some MMI's have been identified to be supplied with a cable connector type which can be removed without the use of a tool, then allowing access to live parts. This issue has been identified on both the Back Up port connector and the MMI a.c. supply connector.

This is deemed to be non-compliant to AS/NZS 4777.2 Clause 2.3.3.1

Note: This problem is deemed to be a product issue, Energy Safe are working with manufacturers to rectify the issue to ensure product safety and compliance for the Australian market.

LEW's and LEI's should be aware of this and notify suppliers where the non-compliance is identified.

Products identified to be non-compliant should not be installed and should not be left energised. LEW's are advised to contact the product supplier/manufacturer and obtain a purpose designed locking mechanism for the product to ensure the connector/s cannot be removed without the use of a tool.

The images below show the manufacturers (Growatt) locking device as an example.



Image 4

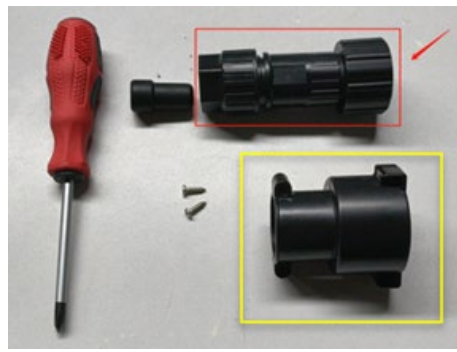


Image 5

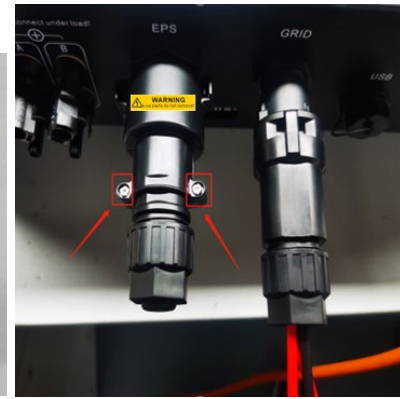


Image 6

**Image 4** - shows the supplied EPS connector that can be removed without the use of a tool, to access live parts.

**Image 5** - shows the manufacturers EPS connector with a lockable shroud to be fitted.

**Image 6** shows the supplied EPS connector with the lockable shroud fitted that allows the connector to only be removed with the use of a tool.

Note: The shroud shall be clearly labelled "WARNING Live Parts do not remove!"

For information regarding the Growatt MMI recall see [here](#)

For information regarding the Goodwe MMI recall see [here](#).

Please be aware of all issues identified within this safety bulletin as there may be some MMI's available on the Australian market that do not comply and have not yet been identified.

## Who we are

We are Victoria's safety regulator for electricity, gas and pipelines.

Our role is to ensure that Victorian gas and electricity industries are safe and meet community expectations. We are also responsible for licensing and registering electricians, and educating the community about energy safety.

More information is available on the Energy Safe Victoria website: [www.esv.vic.gov.au](http://www.esv.vic.gov.au)