APPLICATION GUIDE

FRONIUS SNAPINVERTER SERIES – EARTH FAULT ALARM SETUP AS PER AS/NZS 5033

1. CHANGE LOG

Date	Version	Comments	Author
16/06/15	1.0	First release	Fronius Australia
10/05/23	2.0	Major content and structure upgrade	Fronius Australia

2. SCOPE

This document aims to provide instructions on how to setup the Fronius SnapINverter series inverters for compliance to the AS/NZS 5033 Earth Fault Alarm requirement.

AS/NZS 5033 stipulates the following requirement for an Earth Fault Alarm where the PV Array is >120Vdc:

The alarm system shall continue repeating its operation at least at hourly intervals until the earth fault is corrected or until the fault is acknowledged.

The earth fault alarm shall be at least one of the following types:
(a) Remote communication (such as email, SMS or similar).
(b) Local indication

The Fronius SnapINverter series inverters are able to provide a "Remote Communication" option via Email or SMS and "Local indication" option via a local audible or visible alarm.

3. EARTH FAULT ALARM - REMOTE COMMUNICATION

The remote communication functionality uses e-mail messages in the form of alarm notifications communicated via existing Internet connection to nominated contacts. The Datamanager creates the Earth Fault error and transmits that to Solarweb. Solarweb then sends the error in an Email to the nominated contacts.

3.1 Requirements

For the remote communication option to be used, it is required to make use of Fronius' online platform Solar.web, This means the PV system needs to be connected to the Internet either via Fronius Datamanager card (in the inverter) or Fronius Datamanager box (external).

Basic requirements for enabling this functionality are:

/ Datamanager fully commissioned and operational,
/ Fully functional internet connection of the inverter,
/ System configured & registered in Fronius Solar.web.

In the event of a detected earth fault, notification of an Earth Fault is sent to the nominated contacts every hour until the fault is acknowledged in Solarweb.
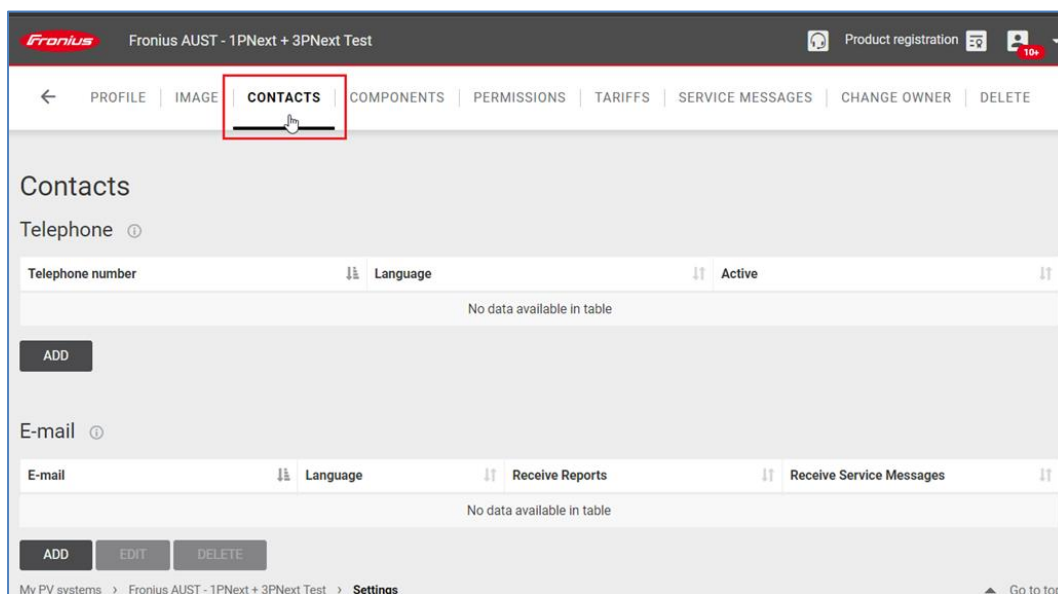
3.2 Setting up Remote Reporting in Fronius Solar.web

Once Datamanager has been successfully commissioned and PV System created in Solar.web, to enable the Earth Fault Alarm reporting functionality follow steps **a)** though to **e)** below.
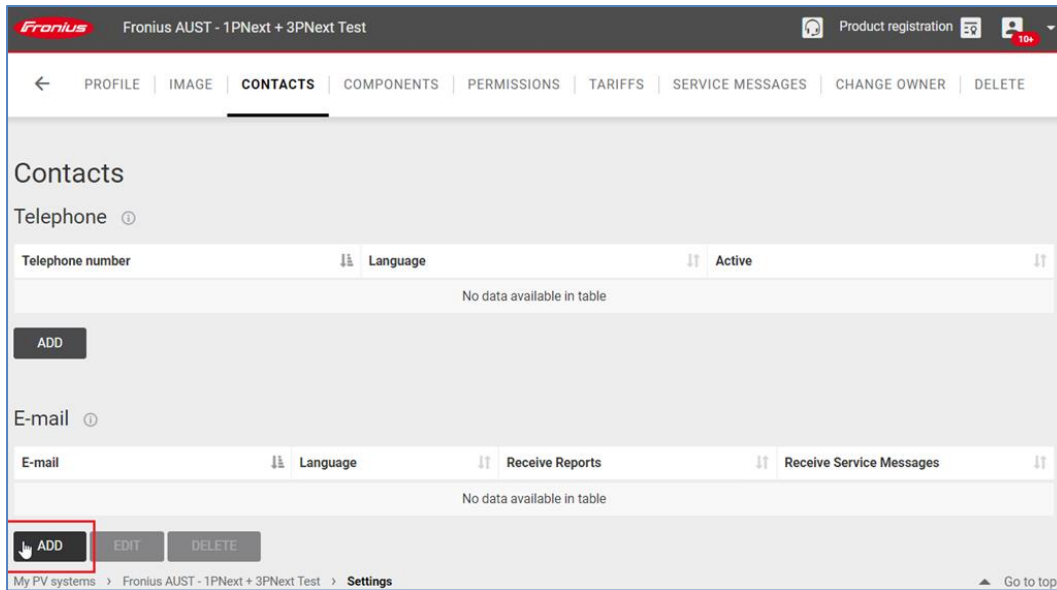
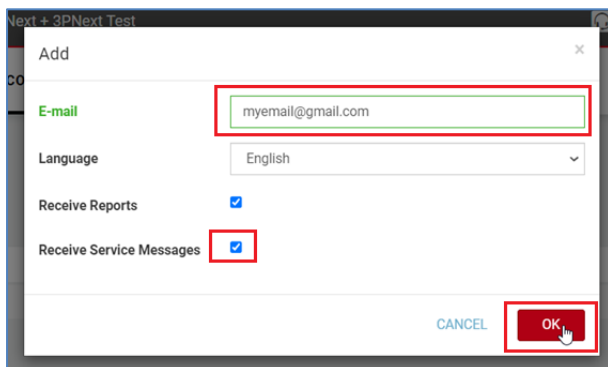**a)** Open Solar.web, select your PV System, and navigate to *"SETTINGS"*.
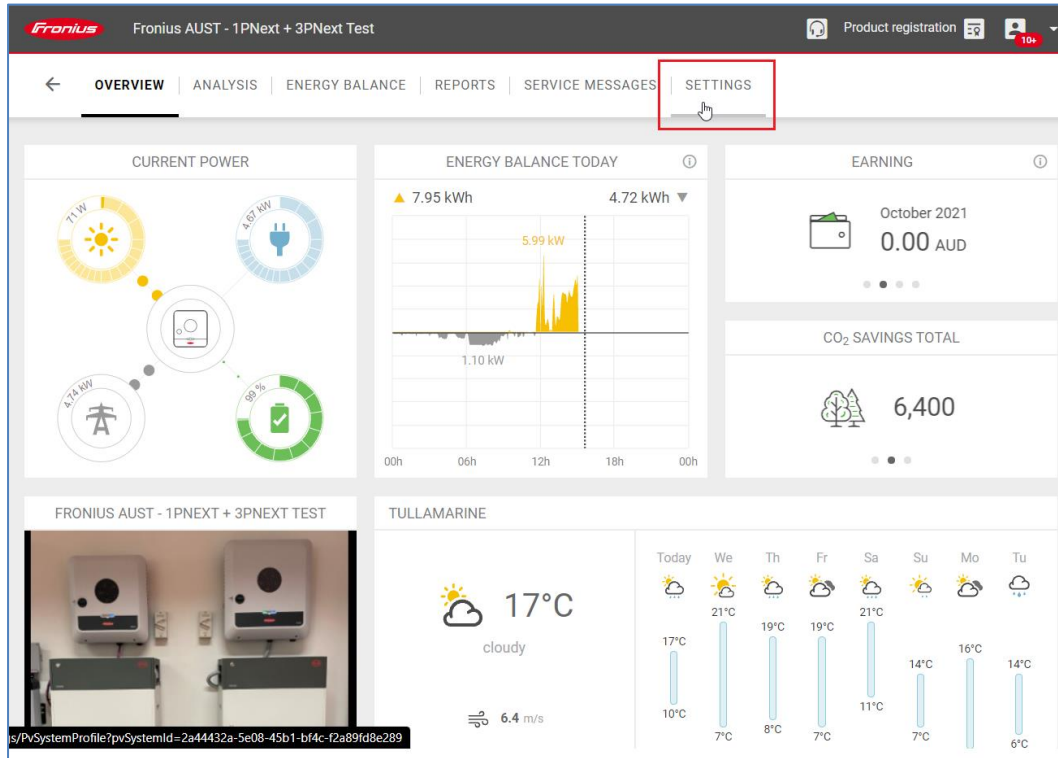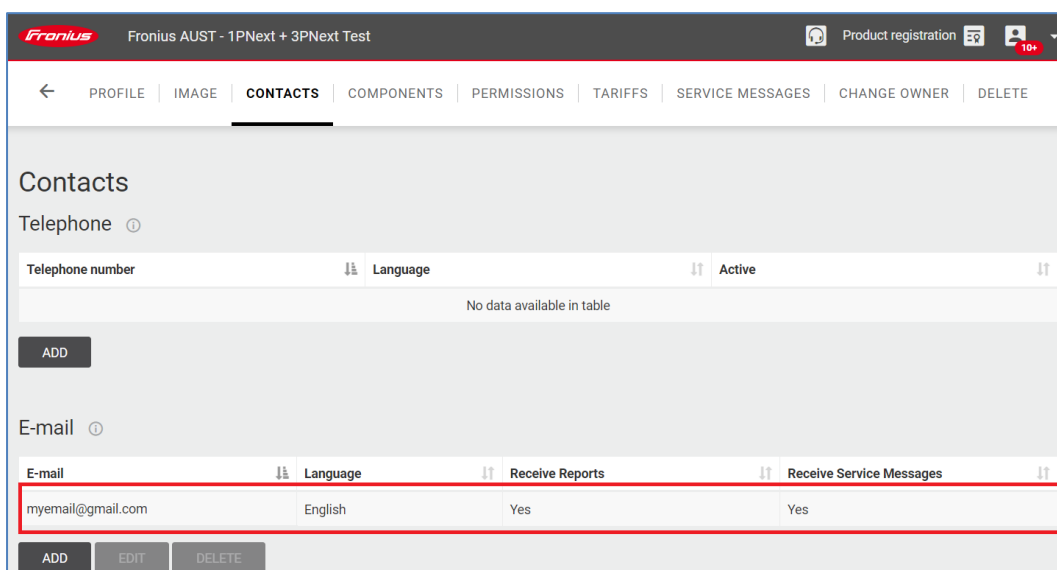

b) Navigate to *"CONTACTS"*.

3.3 Checking for service messages in Solar.web

If inverter errors occur (including Earth Fault errors) the system will automatically send alarm notifications in the form of e-mail messages, to nominated contacts (listed under **E-mail** section in **CONTACTS**). It is also possible for users to check previous alarms for system in question. To do so follow steps below.

a) Open Solar.web, select the appropriate system and navigate to *"SERVICE MESSAGES"*.
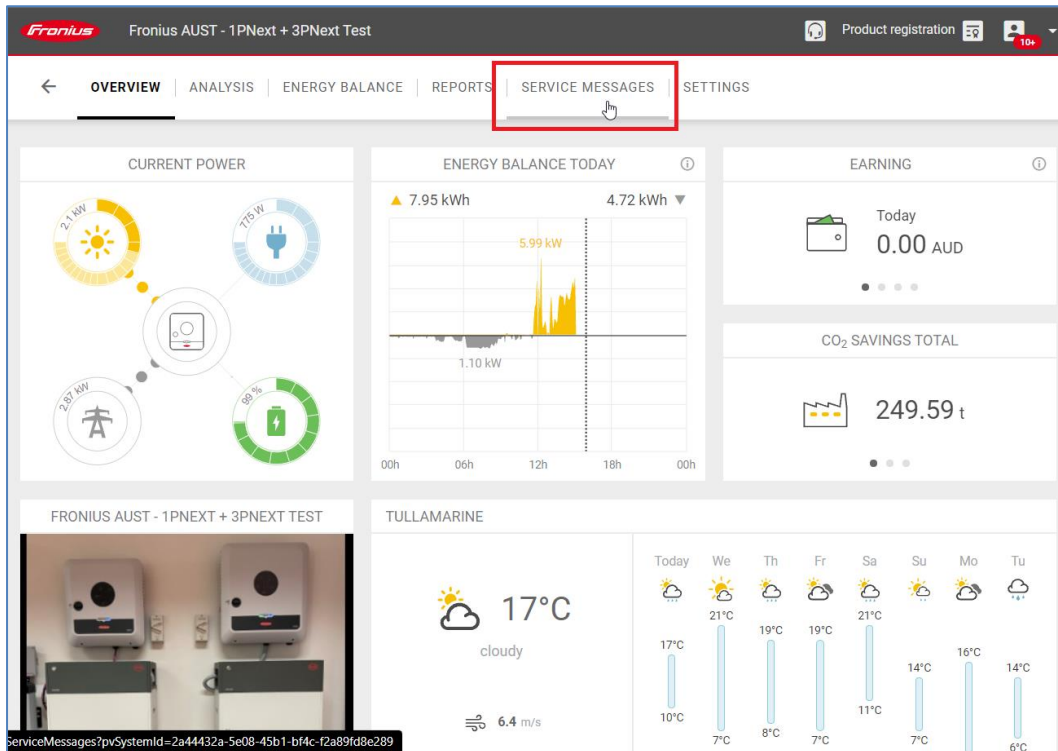
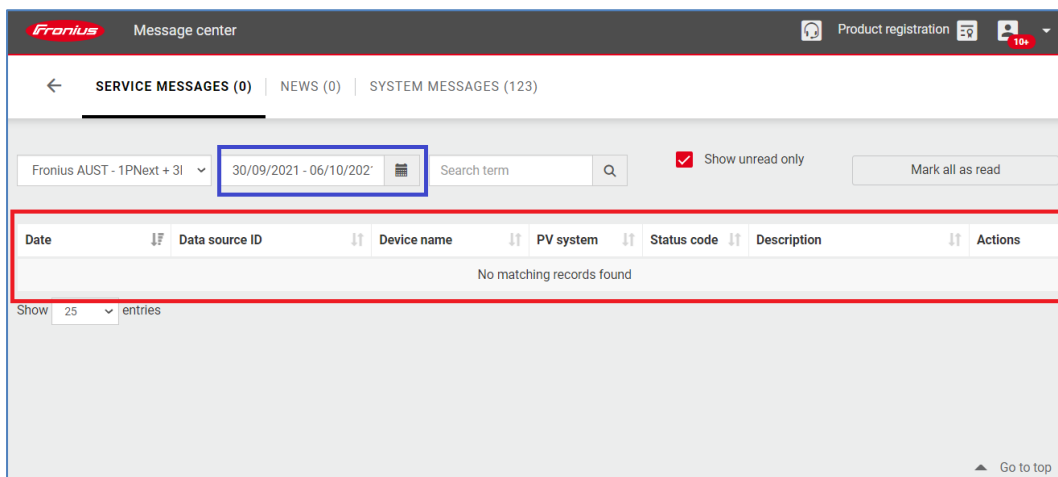**b)** Historical alarms including Earth Fault Alarms will be shown in the window marked in red below.
An Earth Fault Alarm will be shown with the status code **475 or 502**, with the description "**Isolation error**"

NOTE: the historical alarms/messages (if any) are shown under the red marked area above. They will be relevant to the time selected in the data/time selector tool marked with blue. Time selection can be adjusted based on your requirements.

4. EARTH FAULT ALARM – LOCAL INDICATION

For the *"local indication"* option to be used, the inverter's the Signal Relay (voltage-free relay) is configured to switch when an inverter error is present, which is then used to operate a buzzer and/or light to indicate an earth fault alarm.

4.1 Requirements

3 key components are needed for this option:

/ Inverter Signal Relay
/ External Alarm Device
/ Power Supply for the Alarm Device.

For the options shown in this document, an external power supply has not been used as it is assumed that the power consumption of the Alarm Device to be relatively low. However, it is possible to integrate an external power supply for devices that have high power requirements. For further information contact Technical Support.

4.2 Signal Relay Characteristics

The inverter's Signal Relay (floating switch contact), is shown as (7) in the figure below. It's a voltage-free relay that can be programmed to operate a buzzer and/or light to indicate an earth fault alarm. It comes with an orange mating connector.

Signal Relay specifications:
/ Max. AC 250 V AC / 4 A AC,
/ Max. DC 30 V DC / 1 A DC,
/ Max. 1.5 mm² (AWG 16) cable cross-section.

Signal Relay pin designation:
/ Pin 1 = NO contact (Normally Open),
/ Pin 2 = C (Common),
/ Pin 3 = NC contact (Normally Closed).

Figures below show Signal Relay's physical location in relation to inverter positioning.
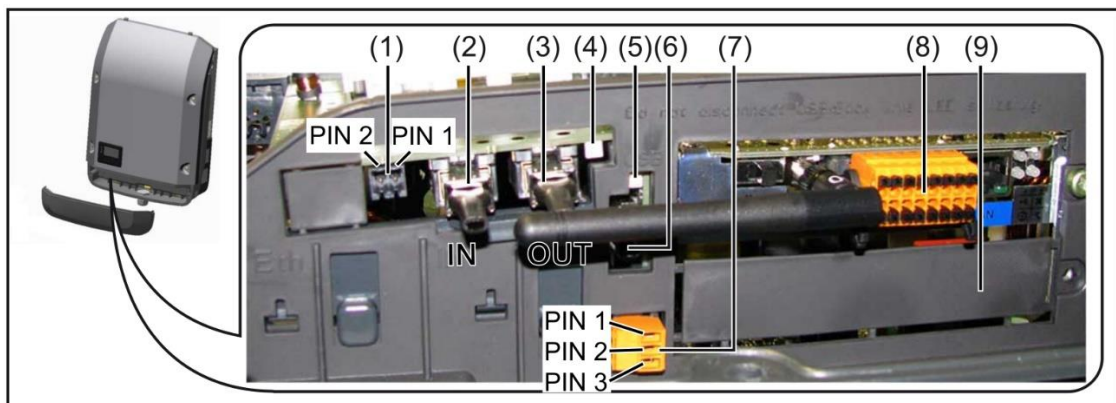

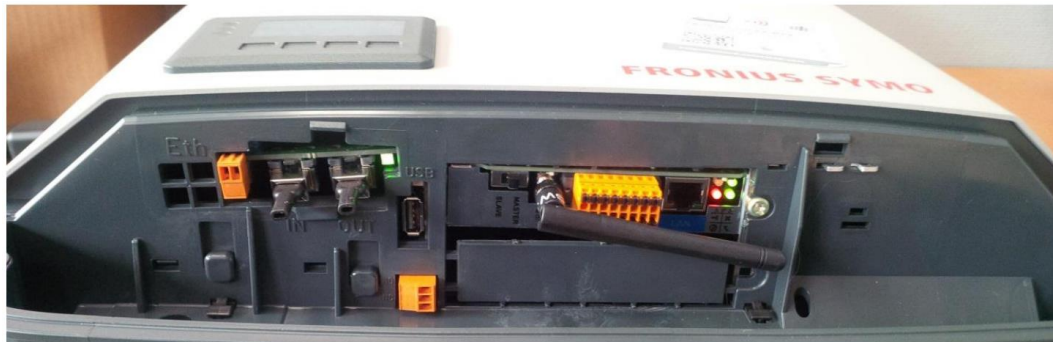Figure 1: Fronius Inverter under Data communication cover

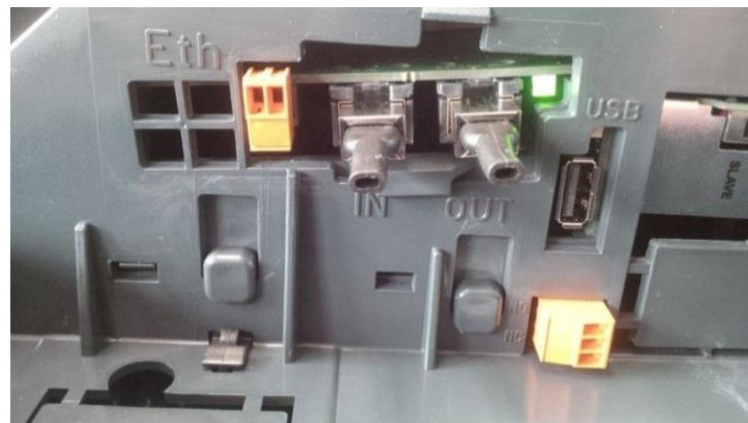Figure 2: Fronius Symo Inverter Data communication area

Figure 3: Data communication area – close up view

4.3 Alarm Device

In order for the local indication alarming functionality of the Earth Fault alarm to be complete an Alarm Device in the form or audible or visual signal would need to be installed.

Figure below shows one possible setup by using a buzzer (audible alarm). Other devices are also possible to be operated via the Signal Relay.

It is important to note that there are few options to choose from when choosing an Audible Device and matching its **power supply**, and they are:
  / **12Vdc supply from Solar Net** – Use either IN or OUT RJ45 socket at the inverter, limited to **1A** or **1.2W**.
  / **12Vdc supply from Datamanager card** – Current limited to **0.2A** or **3W**.
  / **5Vdc supply from the USB port** – Power limited to **2.5W**.
    / Particularly useful when multiple inverters are connected together via **Solar Net** loop and the IN/OUT RJ45 sockets are occupied. Use suitably rated 5Vdc buzzer.
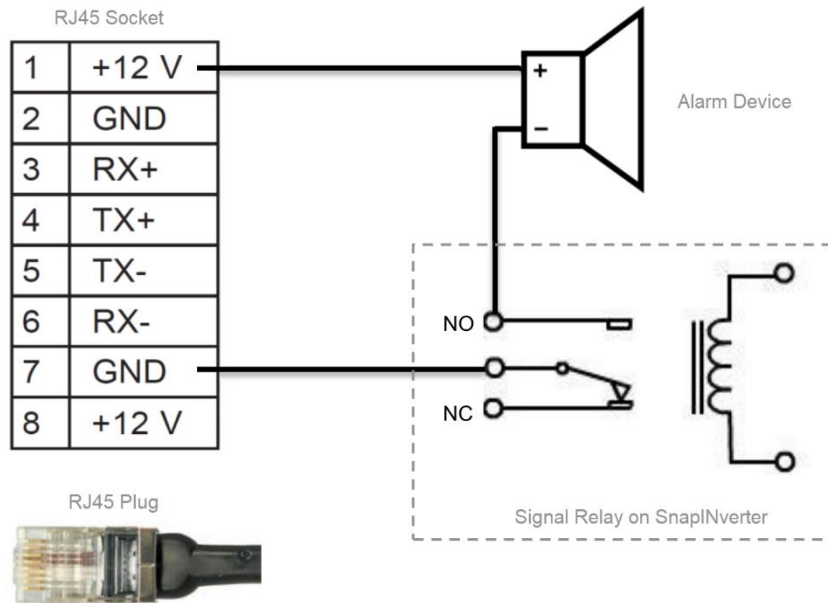
Figure 4: Suggested wiring diagram showing Inverter's Signal Relay, 12Vdc supply from Solar Net RJ45 socket and external 12Vdc buzzer

Figure 5: Signal Relay using 12Vdc supply from RJ45 (left) with 12Vdc buzzer mounted to underside of inverter (right)
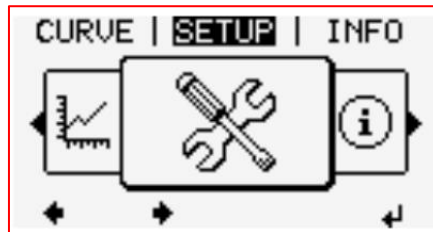

Figure 6. Buzzer connection with Signal relay and 5V USB power supply

4.4 Programming the Signal Relay

Once wiring and physicaly setup has been completed, to enable the Earth Fault alarm local indication functionality please follow steps **a)** though to **e)** below.
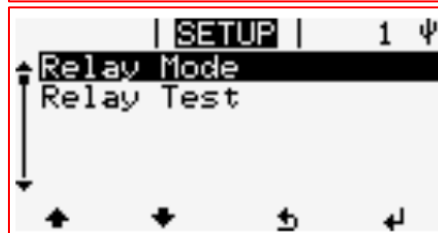
a) Select **SETUP** and press **ENTER**

↔ 1 In the menu level, use the 'Left' or 'Right' keys to select the 'SETUP' menu item

↵ 2 Press the 'Enter' key
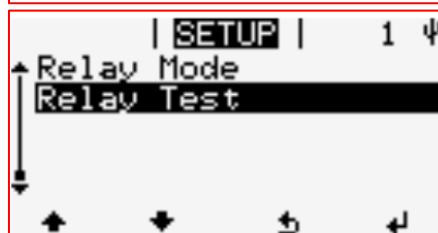
b) Select **Relay** and press **ENTER**

c) Select **Relay Mode** and press **ENTER**

d) +/- keys to Select **Permanent** under **Signal Settings** and press **ENTER**

e) Test the alarm by selecting **Relay Test** and press **ENTER**

5. FAQ

Q1: Does my system need to be connected to Internet?
A1: Internet access is required for the portal to be able to receive telemetry from your system including system alerts.

Q2: I don't have internet what are my options?
A2: As internet access is required we would recommend enabling internet access on-site via cellular modem. One possible solution is [SE_WP_Application_Guide_Cellular_Integration_EN](#), however, this is a recommendation only, you might have/know of other options more suitable for yourself.

Q3: If I use the cellular option how much data would I need?
A3: Refer to Application Guide Cellular Integration document (link above) section 4 Data Volume / Provider.

Q4: If I have multiple inverters onsite, and they are connected via Solar Net, and connected to Internet do I need to do any additional setup?
A4: No additional setup setups are required, please note this inverter configuration assumes that the master inverter has Internet capability (internal datamanager card).

Q5: If I have multiple inverters onsite, and they are not connected via Solar Net, and not connected to Internet do I need to do any additional setup?
A5: No additional setup setups would be needed, although please note that the local indication option including Alarm devices set for earch inverter.

END OF DOCUMENT

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For more detailed information on product information or installation/operation instructions please visit http://www.fronius.com/en-au/australia