IO network 2

Control app for network attached modules from robot-electronics.co.uk

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Overview

IO network 2 is a control app for network enabled modules from robot-electronics.co.uk. The app allows you to create a custom layout of controls across multiple pages to control any number of modules that you have on your network. Your settings can be exported from the app so that you can back them up and import them onto your other devices. The supported modules that you can control are:

- dS1242
- dS378
- dS3484
- dS2824
- tcp184
- ETH002
- ETH008
- ETH484
- ETH8020
- ESP32LR20
- ESP32LR40
- ESP32LR88

There are 2 modes in the app, User mode and Edit mode. To change between these two modes tap on the button in the top right of the navigation menu and select either the "Enter edit mode" or "Exit edit mode" option.

User mode

This is the default mode that the app will launch into. In this mode the app will try to establish a connection to your modules and provide you the controls needed to interact with them.

Edit mode

This mode will allow you to configure the connections to your modules as well as add pages and controls to your layout. Each page you add can have a custom title. Each control on each page can be configured to control IO of any of the available module connections that you have set up previously.

User mode
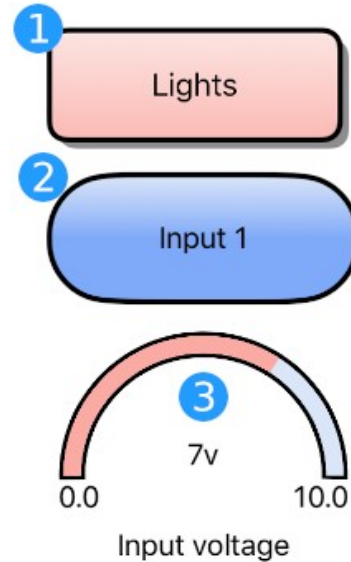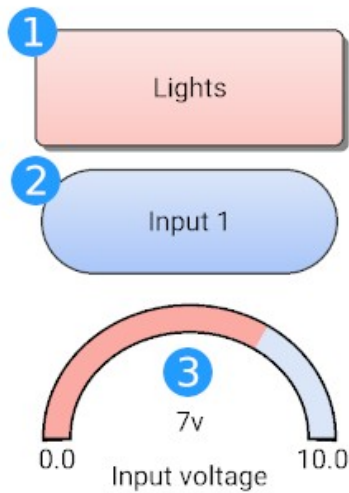
Android

IOS

1. **A digital output**
   This is a button that is used to control an output such as a relay. The colour of the button indicates the current state of the output with red being active and blue being inactive.

2. **Digital input indicator**
   This shows the state of a digital input. The colour of the indicator shows the state, red for active and blue for inactive.

3. **Analogue input indicator**
    This shows the value of an analogue input. The value in the centre is the value being read back from the module after the analogue value algorithm has been applied. The minimum and maximum values are set in the analogue options screen and indicate the expected range of values.

4. **User mode menu**
    This menu allows you to enter edit mode.

Edit mode overview

This is the mode that you use to edit the app settings. In this mode you can add controls to the screen and place them where you need them. This is also where you will configure the connections to your modules and which controls on the screen will be connected to them.
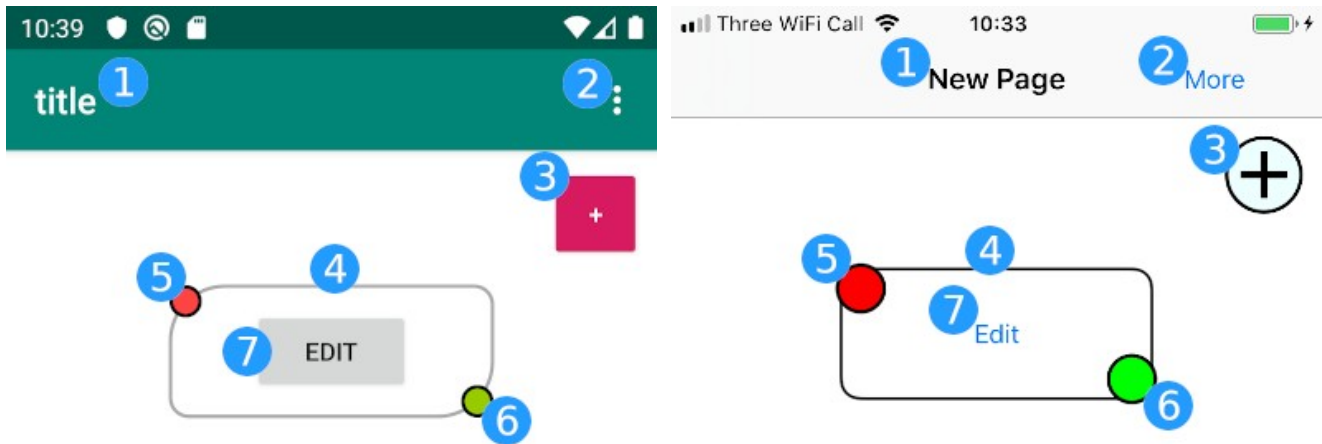
Android	IOS

1. **Page title**
   This is the name of the current page, this can be customised for easy identification.

2. **Options menu**
   This will show the options menu.

3. **Add control button**

   Pressing this will add a new control to the page.

4. **A control**

   This is a control ready for editing. It can be moved and resized to suit your needs.

5. **Remove control button**

   Tapping this button will prompt you to confirm removal of this control from the screen.

6. **Resize control**

   Dragging this part of the control will allow you to resize the control to fit the portion of the screen you need it to.

7. **Control edit button**

   Pressing this button will show you the settings for which module this control will connect to and which IO it will control.

Adding a control to the page.

Before any controls will be available for you in User mode they must first be created and configured in edit mode. This is done simply by pressing the 'Add control button' in the top right of the screen. The new control will be created in the next available space on the screen. The new control can be moved to a location on the screen of your choice and resized to fill the portion of the screen you need it to. Once a control has been created it needs to be configured pressing the 'edit' button in the centre of the control will take you to the control edit screen. In the control edit screen you will be able to select which of the modules on your network the control will connect to and which of the modules IO ports it will represent. The modules that the control can connect to are configured in the 'Control settings' screen that is accessed from the edit mode menu.

Edit mode options menu
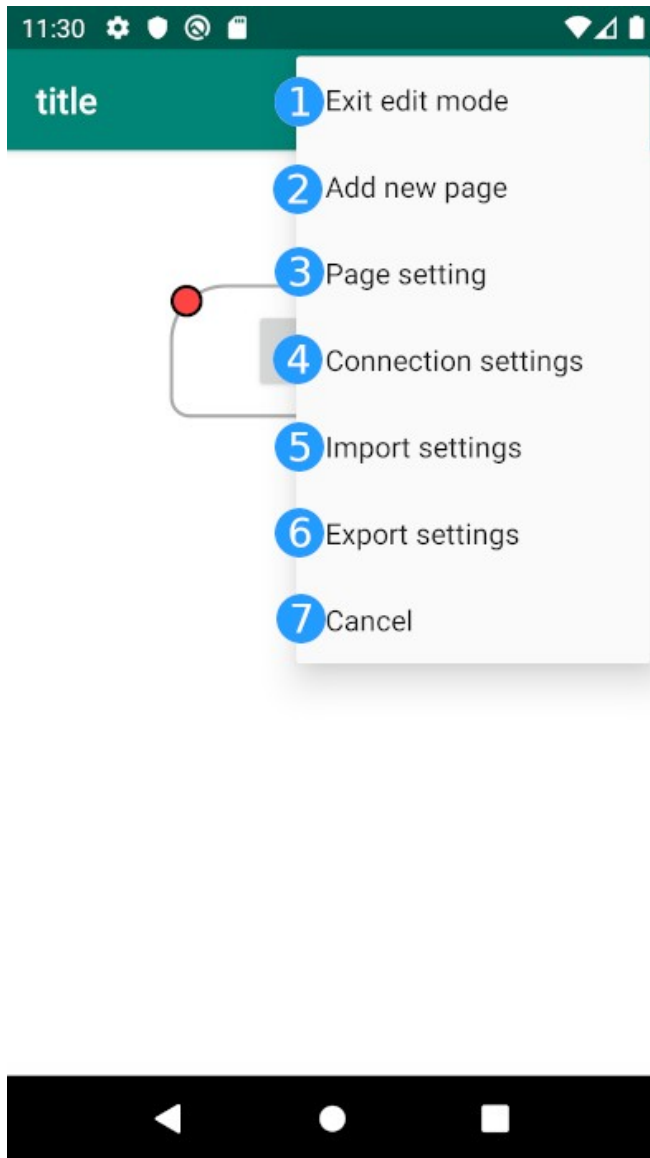
Android
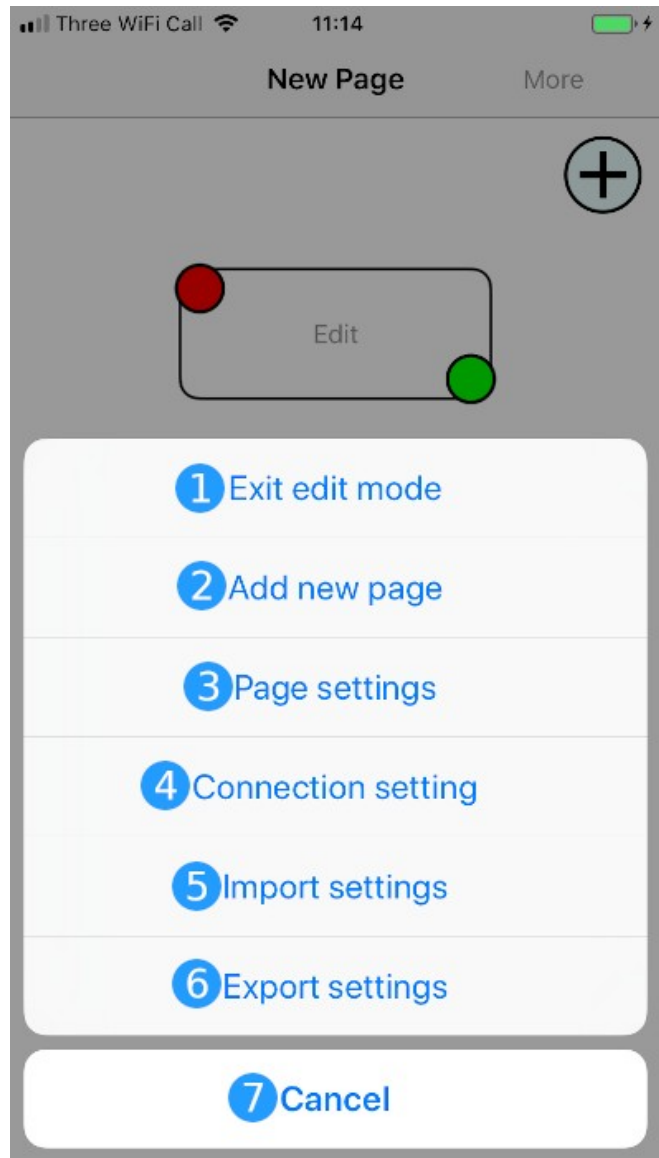
IOS

1. **Exit edit mode**
   This option will exit edit mode and take you back to User mode. Changes that you have made in edit mode will be saved automatically.

2. **Add new page**
   This option will add a new page of controls to the app. You will be prompted to input a name for the page before it is created.

3. **Page settings**

   This option will take you to the settings screen for the current page. Here you will be able to change the current page name or choose to remove the page from the app.

4. **Connection settings**

   This option will take you to the connection settings screen. Here you can add, configure and remove the connections to the modules on your network. You will have one connection for each module.

5. **Import settings**

   This option will allow you to import a settings file from local storage on your device.

6. **Export settings**

   This option will allow you export your current settings to a file on your devices local storage.

7. **Cancel**

   Close this menu and continue in edit mode.

Adding/Removing a page of controls

To add a new page of control to the app simply select the 'Add new page' item in the edit mode menu. You will them be prompted to set a name for the new page of controls. If you wish to remove a page first scroll to the page that you want removed and then select the 'Page settings' item in the edit mode menu. In the page settings screen you can either change the name of the page or remove the page from the app altogether.

Connection settings

Selecting the 'Connection settings' item in the edit mode menu will take you to the connection settings screen. Here you can add a connection for each of the modules that you have on your network and each connection can be given a name to easily identify which module it is connecting to. Pressing the 'Add new module' will create a new connection and clicking on the connection name itself will take you to a screen where the settings for that connection can be set such as IP address, port number and module type that you are connecting to. You only need to define one connection per module that you have on your network. These are the connections that you select when you select which module a control will connect to.

Page settings overview

This view allows you to edit the settings for the current page that you are editing.
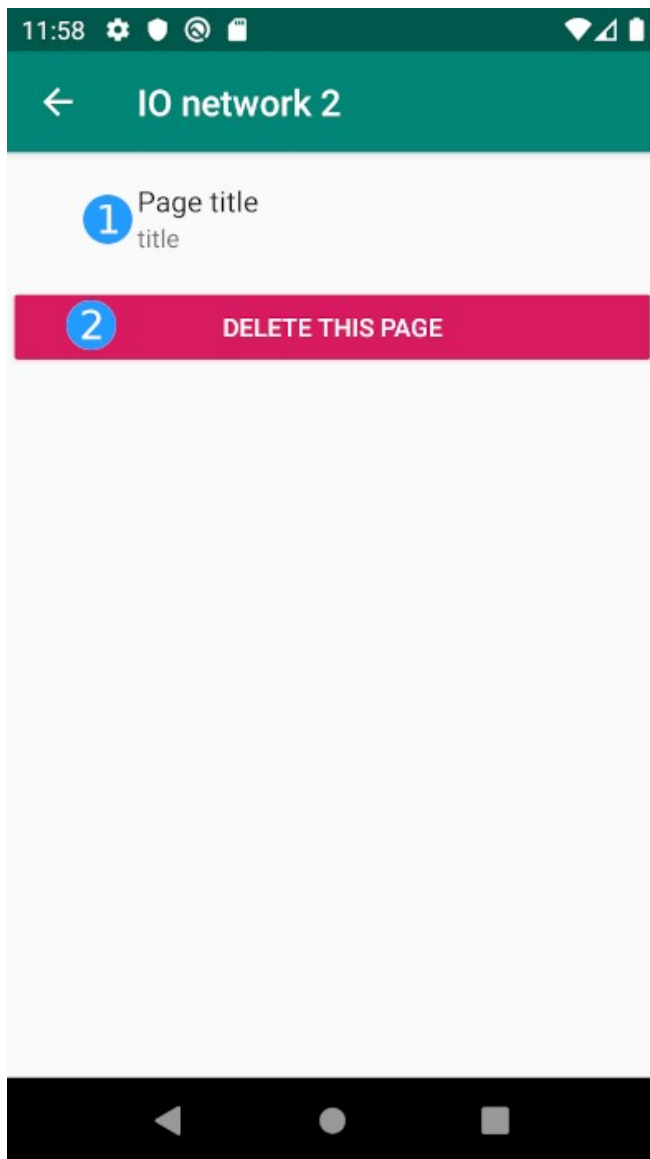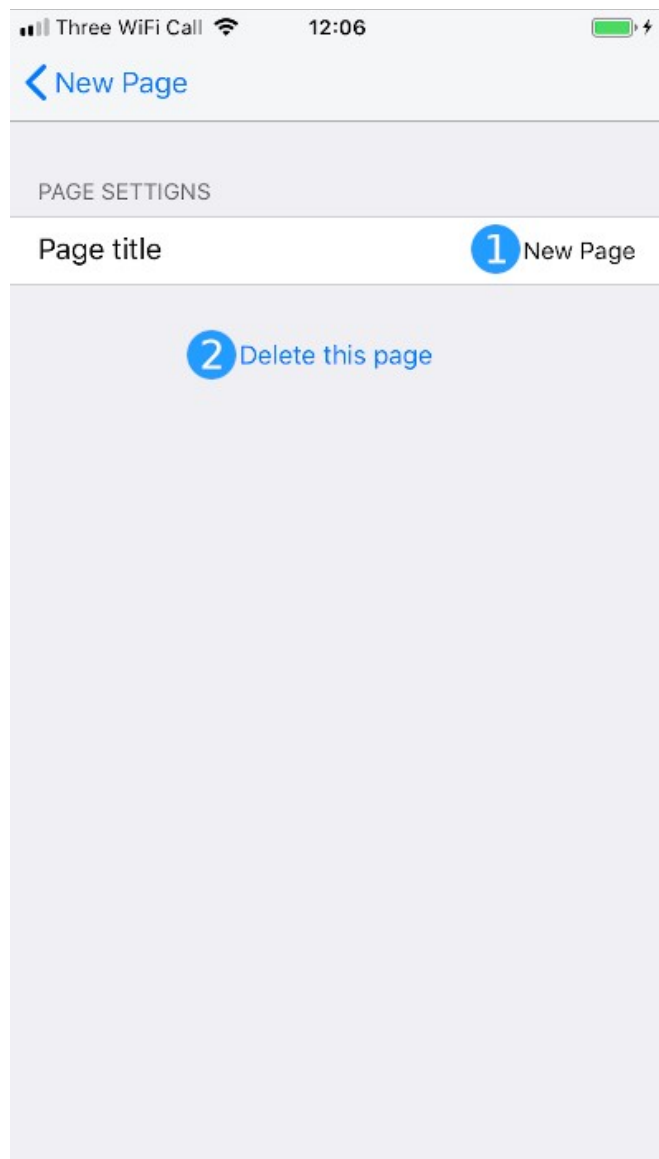
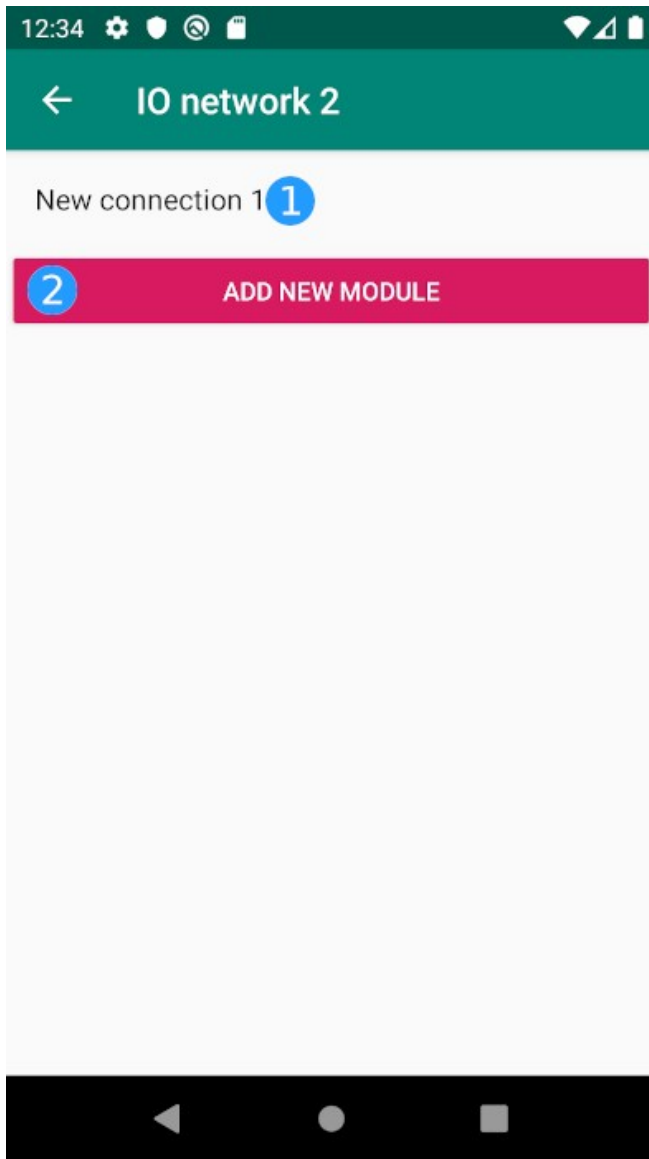| Android | IOS |

1. **Page title**
   This will allow you to edit the title of the page that you are editing.
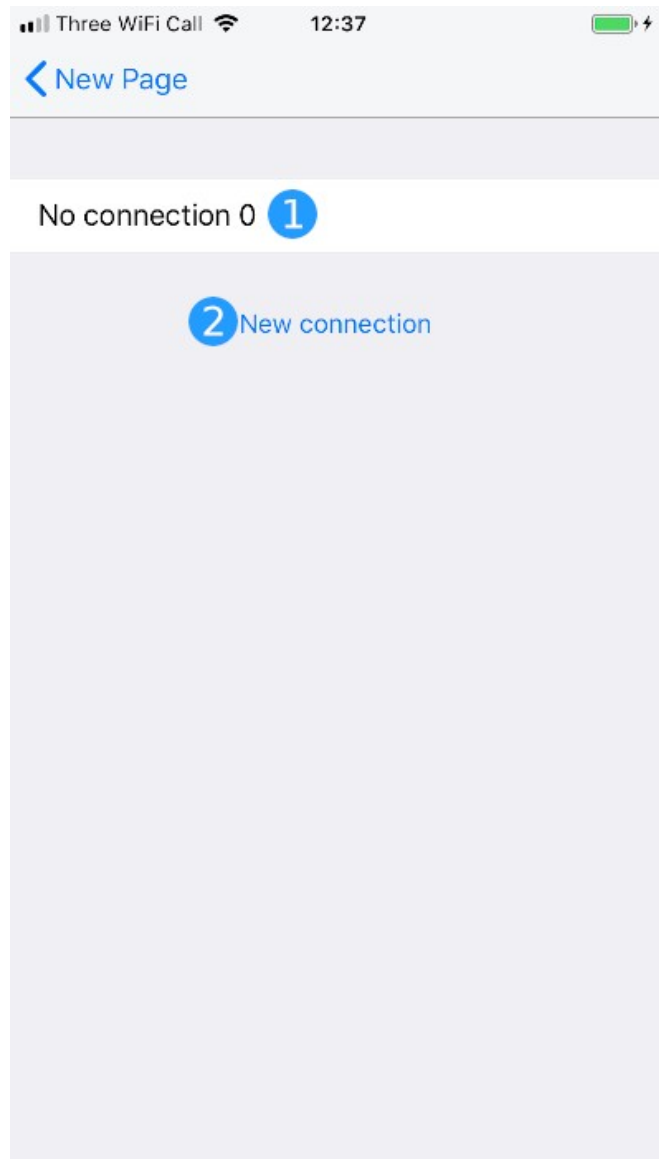
2. **Delete this page**
   This will remove this page and all of its controls from the app. You will be prompted to confirm removal before the page is removed.

Connection settings overview

This view allows you to add connection details for the modules that you have and to access those settings for editing.

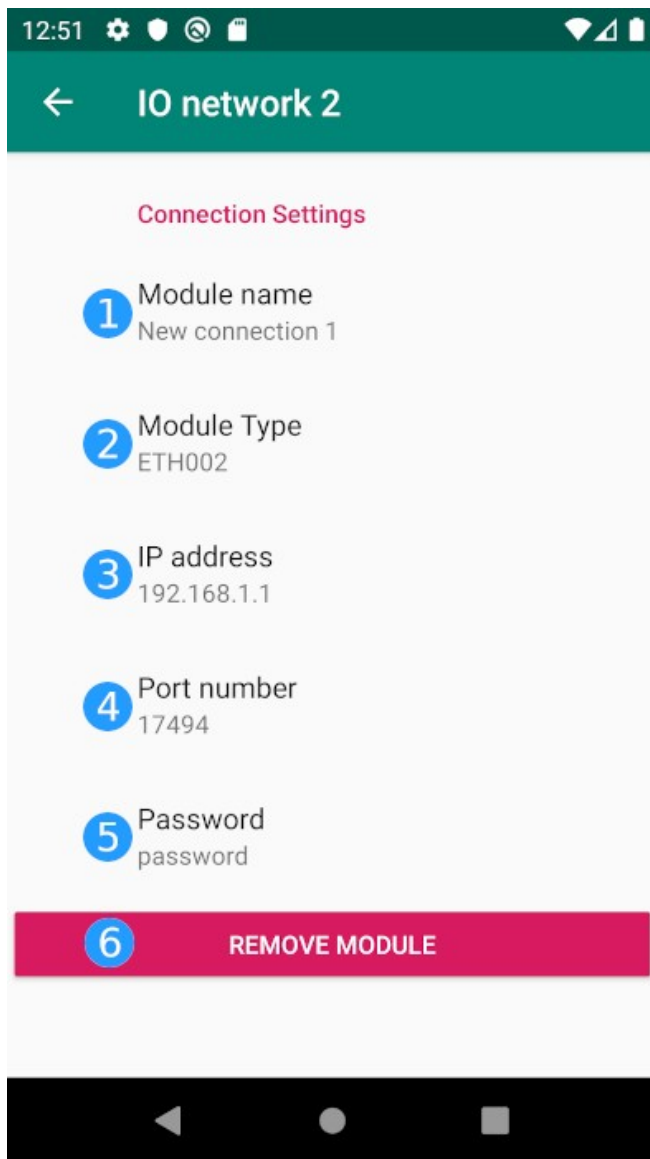| Android | IOS |

1. **A module connection**
   This is a connection that has been defined in your apps settings, tapping on this will take you to a screen where the connections settings can be edited.
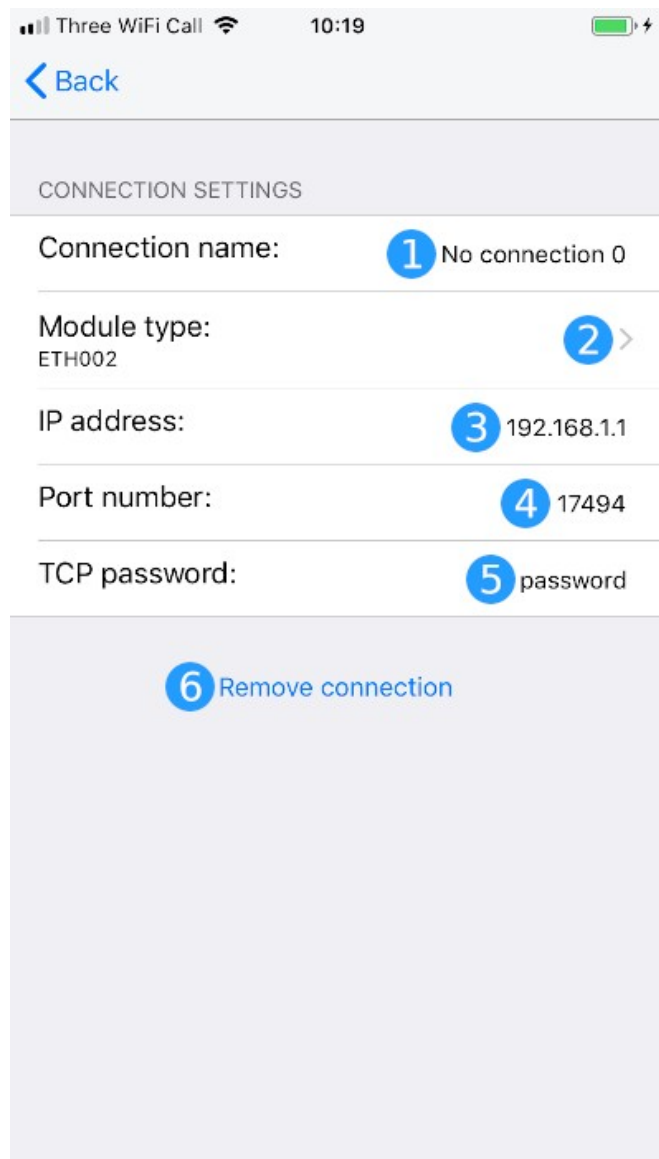
2. **Add new module**
   Pressing this button will add a new module connection to the app.

Connections settings edit screen

This view allows you configure the a connection to a module that is on your network.

| Android | IOS |

1. **Module name**
    A name used to identify which module is at the end of this connection.

2. **Module type**
    This option allows you to select which module this connection expects to connect to

3. **IP address**
    This is the IP address used to connect to the module.

4. **Port number**

   This is the port number used by your router for port forwarding to your module.

5. **Password**

   This is the password set on your module to allow you to control it.

6. **Remove module**

   Pressing this button will prompt you to confirm the removal of this connection and all of the controls you have added that are associated with it. Once removed this action can not be undone.

Using the app outside your local network

If you intend to use the app to control your modules while connected to your local network then the IP address will be the IP of the module that you connecting to. To control your module from outside of your local network via the internet you will need configure port forwarding (also sometimes called "virtual server") on your router. You should choose an incoming port for each module, then set up your router to forward that port to the actual IP and port number of the module on your internal network.
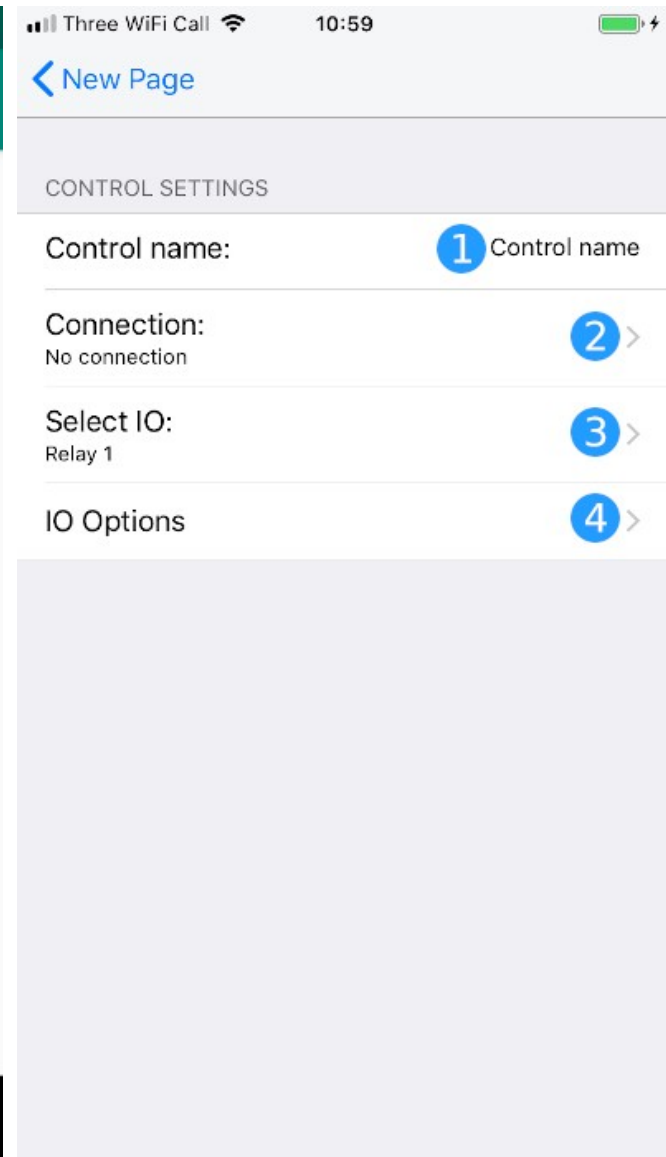
Unfortunately there are so many routers out there we cannot give details on all of them. You should consult your routers manual or search Google for details on your specific router.

Control edit screen

This is the screen that is shown when you press the "edit" button in the centre of a control.
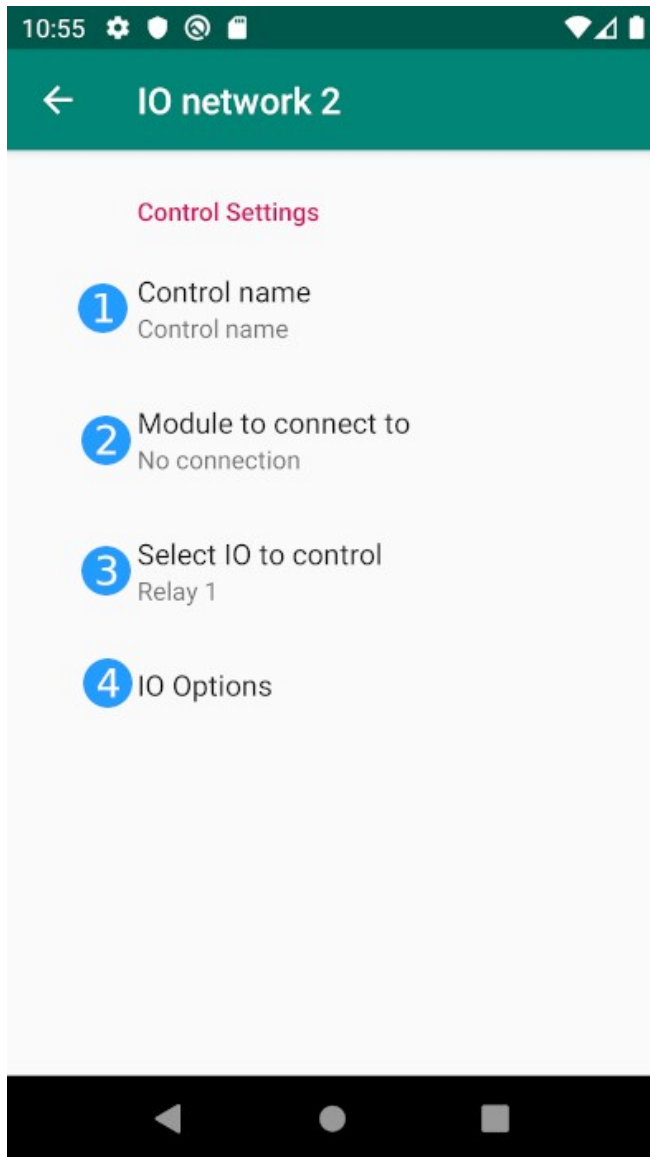
| Android | IOS |

1. **Control name**
   Allows you to set a custom name for the control for easy identification. This name will be displayed on the control when in User mode.

2. **Connection**
   This option allows you to select which module this control will connect to. This will present you with a list of the modules that have been added in the 'Connection settings' screen.

3. **Select IO**

   Use this to select which IO from the module you are connecting to this control represents. A list of the available IO ports for the type of module that the selected connection has will be shown for you to select from.

4. **IO options**

   Options specific to the IO that you have selected to control in the Select IO screen if available. The menu shown by selecting this item will differ depending on which module you are connecting to and which IO you choose. Some IO's have no extra options to set and so the 'IO options' item may not always be available.
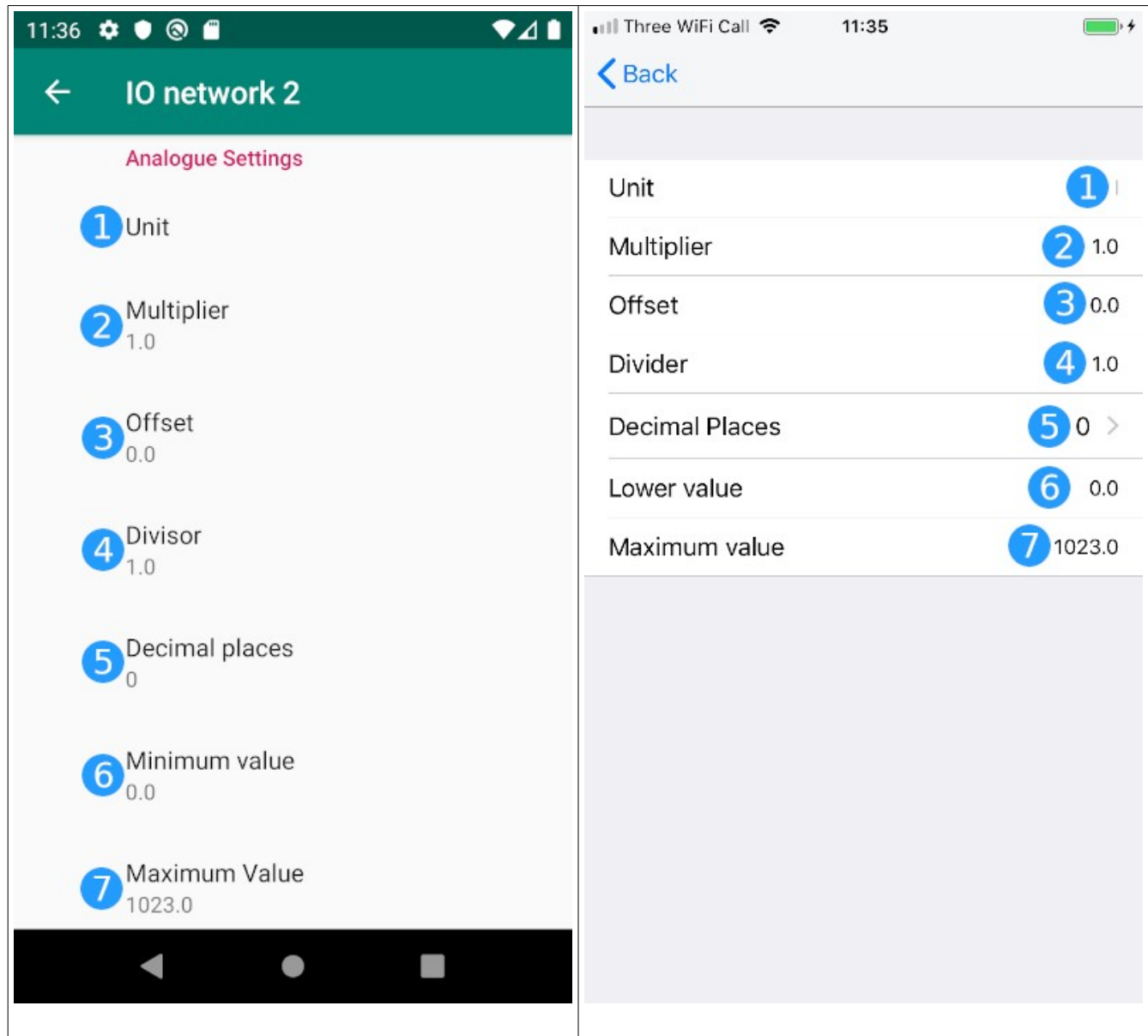
Digital IO options

Android	IOS
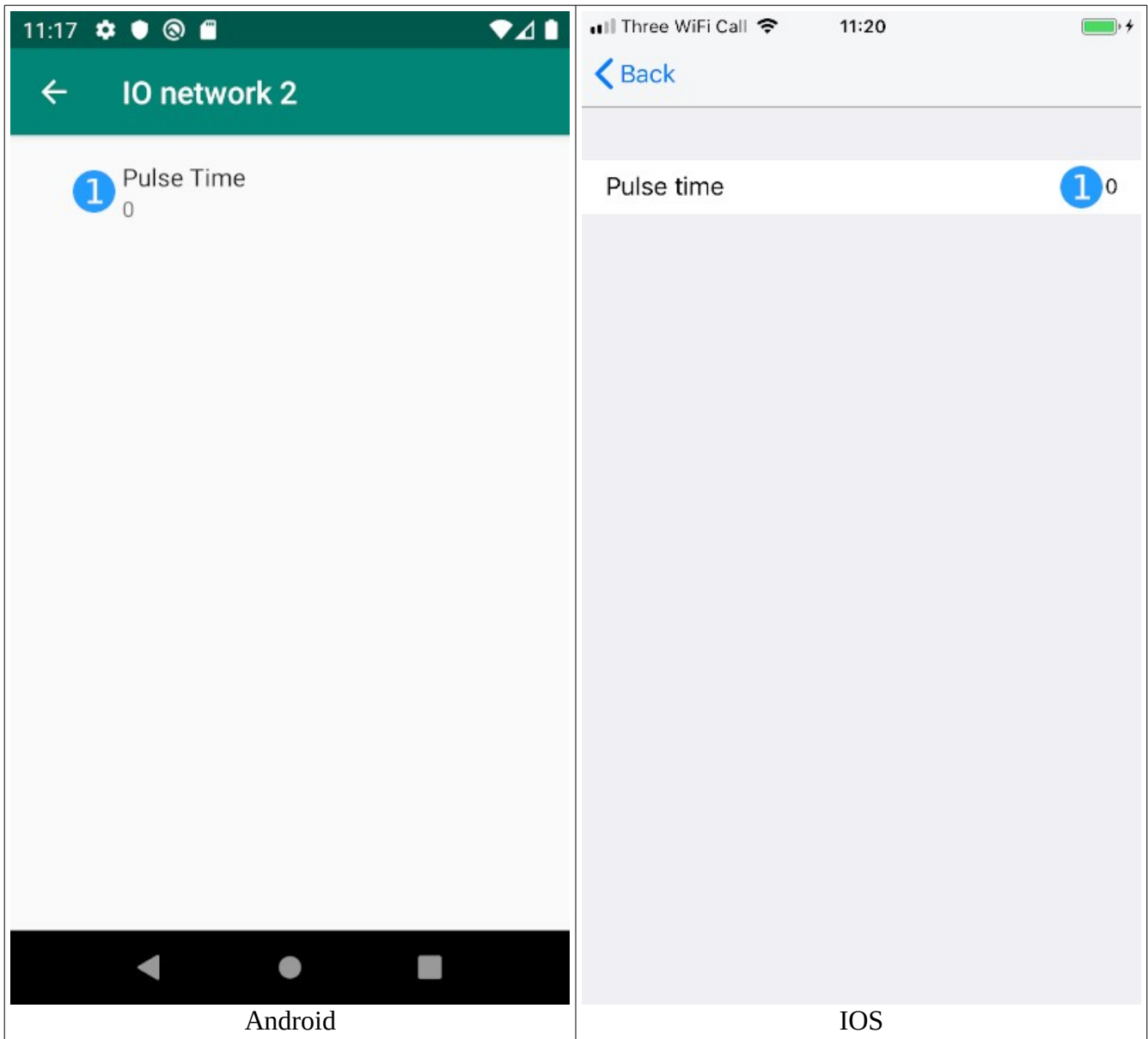
1. **Pulse time**
   Set the pulse time for this digital output.

Analogue IO options

1. **Unit**
    This is a text string that represents the unit that the analogue input is displaying e.g. "°c" or "Volts".

2. **Multiplier**
    This is the multiplier applied to read analogue value during its scaling algorithm.

3. **Offset**
    This is the offset applied to read analogue value during its scaling algorithm.

4. **Divider**

   This is the divider applied to read analogue value during its scaling algorithm.

5. **Decimal places**

   This is the number of decimal places that you want displayed for the value in the analogue meter in User mode.

6. **Minimum value**

   This is the minimum value (after scaling) that the is expected to be received.

7. **Maximum value**

   This is the maximum value (after scaling) that is expected to be received.

Analogue value algorithm

When an analogue value is read back from a module it is put through an algorithm that allows you to scale it to a value to suit the desired output range. The algorithm is:

```
output = ((input_value * multiplier) + offset) / divider
```

The minimum and maximum values are not used in the algorithm itself and are only used to display a minimum and maximum value on the analogue meter that is displayed in User mode.