

INSTRUCTIONS

Freedom Device Switcher

Pack Contents

Carefully check the contents of the box, which are:

FREEDOM unit.

Charging cable

4 x Device cable

These instructions



Product Description

FREEDOM is a four-channel device switcher that allows a single switch to be routed to one of up to four devices, allowing a disabled user to select for him/herself which device the switch is to be used with at any point in time. Selecting the device can be achieved either by an extended press of the switch itself, or by momentarily pressing a secondary select switch where the user has the motor capabilities to operate two switches.

Devices may be of any form, provided they have a conventional switch input via a 3.5mm jack socket. Typical configurations might comprise a communications device, a mobile telephone and a tablet computer. Some devices (for example the phone and tablet in the above example) may require additional equipment to allow connectivity, such as the APPLICATOR from

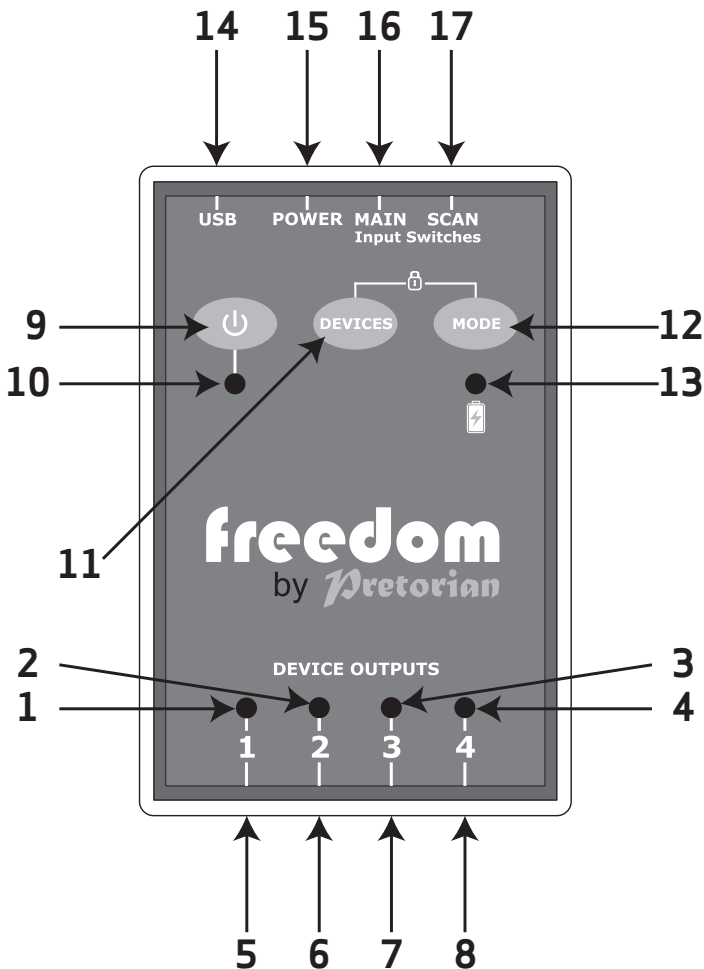
Pretorian. All four outputs are fully isolated so the unit can work with devices which do not share the same ground potential.

FREEDOM operates from a rechargeable lithium battery which is charged via the supplied USB cable, or may be permanently powered from a power source such as a wheelchair auxiliary supply. Once the battery is fully charged the unit will operate for several weeks between charges without ever needing to manually turn off the power. This is vital since the user may not be able to turn off the power.

Both audible and visible low battery indicators are provided to prompt the user the recharge and if the battery should become flat, the unit 'fails safe' by routing the switch to device 1 allowing the switch to be used on the most important device even with no power.

Features

- Routes a single switch to up to four devices
- Use an extended press of the main switch or a second switch to move between devices.
- Selectable dwell time when using extended presses.
- Powered from rechargeable battery or external power supply.
- Fail-safe connection to device 1 when the battery is flat or power fails.
- Lock facility allows the keypad to be locked once the settings have been made.
- Supplied with a charging cable and four device connection cables.



Powering the Unit

To charge the battery, plug the supplied charging cable into the USB-mini socket [14] and then plug into any full-sized USB socket, for example on a computer or phone charger, or alternatively plug a dc power supply into the auxiliary power socket [15]. Prior to using an auxiliary power source, it is important to check that its polarity and voltage are in accordance with the specifications given at the end of this booklet.

Irrespective of the charging source, the charging LED [13] lights green and once fully charged, the LED is extinguished. Charging takes approximately 3 hours if the battery is completely flat and the unit may be used as normal while charging. If the charging LED should flash red during use and the unit emit short beeps, it's time to recharge.

Connecting the unit to devices

FREEDOM may be connected to up to four devices via the four sockets [5-8] and the supplied cables. Occasionally you may encounter a device which has a switch input which uses a connector other than a 3.5mm socket, in which case one of the supplied cables can be adapted. More cables can be purchased from Pretorian- the part number is E070010. You do not need to consider the way in which each respective device is connected to ground or mains earth since each socket in **FREEDOM** is electrically isolated from the others.

The unit is capable of switching up to 30V and must **NEVER** be used to switch anything above this voltage, otherwise personal injury or damage may occur.

When connecting your devices to **FREEDOM**, carefully consider which is the most important to have continued access to, should the battery become flat or the power fail. Ensure that this device is plugged into socket number 1. In most cases this will be device which may be used to call for attention so that you are able to get the unit charged, such as a warden call system.

Limiting the Number of Active Devices

Although **FREEDOM** is able to switch between four devices, in many cases it will be used with fewer than four. To avoid the need to scan to unused devices, the number of active devices may be selected anywhere between two and four inclusive. By default the unit is supplied to switch between all four devices, but if you wish to limit that number, press the Devices button [11] repeatedly until the correct number of LEDs [1-4] are lit*. After a few seconds of there being no further presses of the Devices button, the LEDs are extinguished and the settings saved.

Devices 1 and 2 are always in use and 3 and/or 4 may optionally be disabled.

**Note that the LEDs blink to help distinguish between this and normal operation.*

Connecting the unit to switches

Next connect your switch to the Main Switch socket [16]. Then decide whether you wish to use this switch to select which device it is connected to, or whether you would like to use a second switch for this purpose. If you would prefer to use a second switch, plug it into the Scan Switch socket [17].

Turning the unit on and off

To turn the unit on, press the Power button [9] briefly. You will hear an ascending beep and the power LED lights for the first minute, after which it is extinguished if using the battery, to save power. If the unit is powered either from the USB cable or the auxiliary power socket, the power LED will remain lit.

In most cases there is no need to ever turn the unit off since it automatically goes into power saving mode after a short period of inactivity and automatically awakens when any button or switch is pressed. However if you are transporting the unit, for example, you may wish to manually turn off the power, in which case press and hold the Power button until a falling beep is heard. The unit is then powered down until such time as the power button is pressed again. No other switch or button will awaken the unit.

Whilst powered down, the main switch is connected directly to the default device (socket number 1). You may continue to charge the battery while the unit is powered down.

Selecting the Scan Time (for one Switch use)

If you are using a second switch to scan from device to device, there is nothing more to do- the first time you press the second switch the unit will recognise that's what you intend and will adapt accordingly.

Alternatively, if you intend to use the main switch to scan from device to device, you need to select the duration for which the switch must be pressed before scanning to the next device. This may be 1, 2, 3 or 4 seconds and is selected using the Mode button [12]. Press this button and it will show the current setting, according to Table 1. If you need to change the setting, press the Mode button repeatedly and observe which LED lights. When you see the setting you require, wait a few seconds and the LEDs are extinguished, the setting saved and the unit is ready to use with your new settings*.

**Note that the LEDs blink to help distinguish between this and normal operation.*

In choosing the scan time, carefully consider the way in which your devices work. If some require an extended press, make sure that the time you select here is longer than the device's extended press time to ensure they do not conflict.

LED lit	Extended press time
1	1 second
2	2 seconds
3	3 seconds
4	4 seconds

Table 1: Scan Time settings

Using FREEDOM with one Switch

Pressing the main switch for a period less than the scan time described above will result in the selected device 'seeing' a press of the same duration. Pressing the main switch for a period exceeding the selected extended press time will result in the device seeing no press and instead the unit will scan to the next device. For example, if the unit is currently connected to device number 2 and there is an extended press of the main switch, it will scan to device 3.

Keeping the main switch pressed for longer still results in it scanning to device 4, then back to 1, 2 and so on.

Each time the unit scans to a new device the associated LED [1-4] lights and the unit emits a beep. The tone of the beep is the same when switching from device 1 → 2, 2 → 3 or 3 → 4. A tone of a higher frequency is used when switching from device 4 → 1 so that it is possible to determine the device to which the unit is connected without needing to see it. This is useful both for users with visual impairments and also for allowing the unit to be placed out of sight, for example in a wheelchair pocket.

Using FREEDOM with Two Switches

To select the device to which the main switch is connected, press the Scan Switch repeatedly until the correct LED [1-4] lights, or the correct tone of beep is emitted (see above). The main switch will then be connected directly to the selected device.

As soon as you begin using the Scan Switch, extended presses of the main switch no longer scan from device to device. Should you wish to return to using the main switch to scan, select the appropriate extended press time using the Mode button, according to Table 1.

Locking the Buttons

It is often the case that **FREEDOM** will be configured by an AT professional, parent or care giver and that no further changes to the settings should be made. To prevent the user inadvertently changing the settings, the Devices and Mode buttons may be locked, preventing further changes.

To achieve this, press and hold both the Devices and Mode buttons simultaneously for 4 seconds until a falling beep is heard. The buttons are now locked and any attempt to change the settings will be ignored and a falling beep will be heard. To re-enable the buttons, press and hold Devices and Mode again for 4 seconds until a rising beep is heard. The locked condition has no effect on the Power button.

Low Battery/ Fail Safe

FREEDOM constantly monitors the available charge in the built-in lithium battery. Once it falls to a level where recharging is recommended, the charging LED [13] flashes and the unit emits a short beep every four seconds. The latter allows the user to be made aware of the low battery condition even when the unit is out of sight.

As soon as you see or hear the low battery indicator, it's time to recharge the unit via the supplied USB cable or auxiliary power supply. Charging from completely flat takes around 3 hours and all the available facilities of the unit can continue to be used while charging.

Should the battery not be charged once it enters the low battery condition, the unit will eventually shut down automatically, emitting a falling beep as it does so. As it shuts down the main switch is connected to the fail-safe device (number 1) and will continue to operate even when there is no charge left in the battery. You will not, however, be able to switch to devices 2, 3 or 4 until the power is restored.

Note that the unit goes into a low-power sleep state after approximately one minute of non-use. Once in this state the low battery LED will stop flashing and the low battery beep will no longer be emitted as they consume the remaining power. However, the unit does continue to monitor the battery, and is still able to fail-safe in the event that the charge in the battery becomes too low to operate fully.

Maintenance

FREEDOM has no user serviceable parts. If repair is necessary the unit should be returned to Pretorian Technologies or an authorised Distributor.

Replacement Cables

If you should misplace the charging cable that is supplied with **FREEDOM**, replacements may be purchased from most technology retailers. The cable is the same as a camera cable and may, in most cases, be ordered as such. An alternative description is: USB type A plug to mini-USB plug cable.

Should you require more device cables, these may be ordered from Pretorian using the part number E070010.

Warranty

FREEDOM is warranted against defects in manufacture or component failure for a period of 24 months. The unit is designed for use in domestic and educational environments. Use outside these areas will invalidate the warranty. Unauthorised repair or modification, mechanical abuse, immersion in any liquid or connection to incompatible equipment will invalidate the warranty.

Troubleshooting

Symptom	Possible Cause	Remedy
No power to unit.	<ul style="list-style-type: none">• Battery flat.• Cable broken.• Not switched on.	<ul style="list-style-type: none">• Charge battery using USB cable or auxiliary power supply.• Replace USB cable or auxiliary power cable.• Press Power button [9].
Unit is permanently connected to device 1.	<ul style="list-style-type: none">• No power to unit-gone into Fail Safe.• Unit is switched off.	<ul style="list-style-type: none">• Apply power using USB cable or auxiliary power supply (this will also charge the battery).• Press Power button [9].
Cannot get unit to switch to sockets 3 or 4.	<ul style="list-style-type: none">• Number of devices has been limited.	<ul style="list-style-type: none">• Use Devices button [11] to select correct number of devices.
Extended press of Main Switch will not scan to next available device.	<ul style="list-style-type: none">• Unit set for two switch operation.	<ul style="list-style-type: none">• Use Mode button [12] to set a Scan Time. This sets the unit back to single switch operation.
Cannot make changes using Devices or Mode buttons.	<ul style="list-style-type: none">• Unit is locked.	<ul style="list-style-type: none">• Press and hold Devices and Mode together for 4 seconds to unlock.

Technical Specifications

Auxiliary Power Input Specifications.

Auxiliary socket input voltage range:	8V to 24V dc (typically 12V)
Polarity:	Centre pin +ve
Reverse Polarity Protection:	Yes
Connector type:	Barrel socket, 2mm centre pin.
Maximum current draw:	500mA

Device Socket Output Specifications.

Volt-free contacts, polarity unimportant.

Each socket electrically isolated from others, although voltage offsets should be minimised, especially in light of safety considerations.

Maximum applied voltage, either polarity:	24V dc
Maximum current:	300mA
Typical on-state resistance:	1 Ω
Maximum on-state resistance:	3 Ω
Switching technology:	Opto-isolated MOSFETs.

A technical note about using FREEDOM with one Switch.

When using the main switch to scan from device to device the switch is, in effect, carrying out two separate functions and the unit cannot know which one the user intends when the switch is first pressed. It must therefore wait until the user has released the switch to know the duration of the press and, if it's a short press to be directed to the device, only then can it relay it on to the device. This leads to a slight delay which is equivalent to the duration of the press and in most cases will not be noticeable. Figure 1 illustrates the effect:

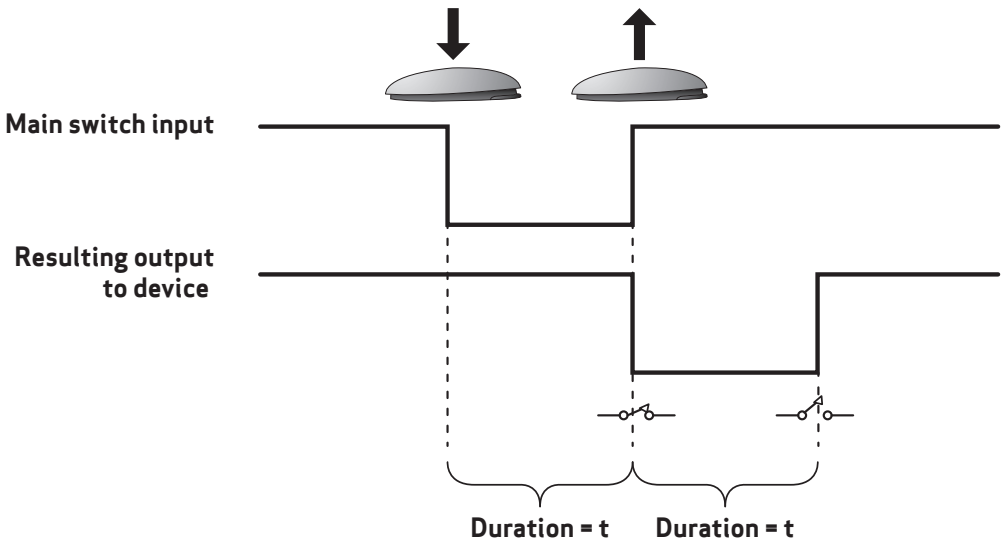


Figure 1: Effect of main switch press < Scan Time

Should the delay lead to difficulties, using FREEDOM in two switch mode is the solution, since this eliminates the delay.



S040137

Pretorian

TECHNOLOGIES LTD.

Unit 37 Corringham Road Industrial Estate
Gainsborough Lincolnshire DN21 1QB UK
Tel +44 (0) 1427 678990 **Fax** +44 (0) 1427 678992

SimplyWorks® is a registered
trademark of Pretorian Technologies Ltd

www.pretorianuk.com
