FOXTEL MANAGEMENT PTY LIMITED

Business iQ (BiQ) Set-Back-Box Installation Guide

FBIQ-001

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Document Control

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History

Version	Date	Author	Description
1.1	03/10/2020	Graham Briscoe	2nd revision drafted from BUS0403_BiQ_SBB_Installation_Guide_A4_FA_Digital.pdf. Included casting setup and hosted in-house channels.
1.2	21/10/2020	Graham Briscoe	Correction to learning method for remote pairing. Added instruction not to change values in video resolution screen. Advice on usage of longer HDMI cables. Added USB stick to tools. Advised for 4K/UHD video reception the SBB should be connected to HDCP 2.2 enabled HDMI port on TV.
1.3	05/01/2021	Graham Briscoe	Added Wifi configuration via USB. Increased recommended max HDMI cable length from 3 to 5m. Emphasised HDMI connection to HDCP 2.2 port on TV otherwise 4K channels will be blocked by the SBB. Increased SBB AP bandwidth for casting from 1 to 2Mbps.
1.4	15/02/2021	Graham Briscoe	Removed ability to use 3m HDMI cable. Added details of why E210-0 can appear on a 4K channel. Changed stage 2 or learning method of programming RCU. Stressed importance of line-of-sight to room when fitting IR extender.
1.5	18/05/2021	Graham Briscoe	Label to add room number for remote controls added to equipment list. Laptop added to equipment list. ~1cm defined as the depth IR prism should protrude when mounted to back of TV. Added alternative bottom mounting of IR prism for fatter TVs. Reverted stage 2 learning method of programming 1st generation remote control. Added 2nd generation remote control. If room does not have a number, name given by customer to be used (e.g. Lounge).

1.6	8/06/2021	Graham Briscoe	Added Communal private viewing area. Added guidelines for single pole install. Added chapter on vuTyme management portal.
1.7	07/07/2021	Graham Briscoe	Added new SBB Installation Process chapter. Removed reference to SBB Quick Installation Guide. Casting set-up revised for properties with Wifi channels already occupied. Added reference to Self Help Troubleshooting Guide

Approval



7th July 2021

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Refer to the Foxtel website for the latest version:

https://www.foxtel.com.au/support/tv/troubleshooting/installation-help.html

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Table of Contents

Sections

1. INTRODUCTION 7

2. THE SET-BACK-BOX 7

2.1. OVERVIEW 7
2.2. PHYSICAL ATTRIBUTES 7
2.3. ACCESSORIES 8
2.4. SPECIFICATION 9
2.5. SERIAL NUMBERING SCHEME 10
2.6. SAFETY INFORMATION 10

3. SET-BACK-BOX INSTALLATION PROCESS 11

4. PRE-INSTALLATION 11

4.1. REQUIRED EQUIPMENT & TOOLS 11
4.2. PROPERTY CREATION 12
4.3. SBB ASSIGNMENT 12
4.4. FIRMWARE UPGRADES 12
4.5. ACCESSORIES 12

5. ONSITE PREPARATION 12

6. MOUNTING THE SET BACK BOX 13

6.1. SMALL FREE-STANDING TV (EST. 32" TO 45") 14
6.2. LARGE FREE-STANDING TV (EST. +45") 16
6.3. WALL MOUNT TV 17

7. HARDWARE CONFIGURATION 18

7.1. RF USE CASES 18
7.2. CABLE CONNECTIONS 19

8. SOFTWARE CONFIGURATION 22

8.1. BOOT SCREENS 22
8.2. INSTALLATION SCREENS 22
8.2.1. Room Assignment Screen 22
8.2.2. Premises Assignment Screen 23
8.3. MAIN APPLICATION SCREENS 24
8.3.1. Welcome Screen 24
8.3.2. Casting 24
8.4. STANDBY LOW POWER BEHAVIOUR 26

9. REMOTE CONTROL 26

9.1. PROGRAMMING THE REMOTE 26
9.1.1. Setup Method 1 – Popular Brands 27
9.1.2. Setup Method 2 – Direct Code Entry 28
9.1.3. Setup Method 3: Code Search 30
9.1.4. Setup Method 4: Learning from Other Remotes 30
9.1.4.1. 1st Generation Slate remote 30
9.1.4.2. 2nd Generation Remote 32
9.1.5. Resetting to Factory Default 32
9.1.6. Remote Control Smoke Test 32
9.2. BATTERY REPLACEMENT 33

10. IN ROOM SMOKE TEST 33

11. HIDDEN FEATURES 34

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11.1. Special Key Sequences 34
11.2. Wi-Fi Configuration 34
11.3. Setup Screens 35
11.3.1. Home Network 35
11.3.2. Wi-Fi Setup 36
11.3.3. Video Resolution 38
11.4. Maintenance Screen 38
11.4.1. Casting Setup 38
11.4.2. Move SBB to another Room 43
11.5. Diagnostic Screens 43

12. VUTYME MANAGEMENT WEB PORTAL 44

12.1. Resetting Your Password 44
12.2. Box Diagnostic Information 45

13. INTERNET CONNECTIVITY 48

13.1. Overview 48
13.2. Network Configuration 48
13.3. Network Security 48
13.4. Network Bandwidth 48

14. IN-HOUSE CHANNELS 49

15. PMS (PROPERTY MANAGEMENT SYSTEM) 50

16. DEFINITIONS, ACRONYMS AND ABBREVIATIONS 51

17. RELATED DOCUMENT 52

18. CONTACTS 53

Figures

Figure 1 Physical Outlook 7
Figure 2 Front Panel View 7
Figure 3 Back Panel View 8
Figure 4 Installation Stage 1 - Small Free-Standing TV 14
Figure 5 Installation Stage 2 - Small Free-Standing TV 15
Figure 6 Installation Stage 1 - Large Free-Standing TV 16
Figure 7 Installation Stage 2 - Large Free-Standing TV 16
Figure 8 Installation Stage 1 - Wall Mounted TV 17
Figure 9 Installation Stage 2 - Wall Mounted TV 17
Figure 10 SBB Connections (RF Use Case 2) 19
Figure 11 Alternative Position of IR Prism for thicker TVs (4cm and above) 20
Figure 12 Recommend Position of IR Prism 20
Figure 13 Boot Screen 22
Figure 14 Room Assignment Screen 22
Figure 15 Premises Assignment Screen 23
Figure 16 Example Welcome screen 24
Figure 17 Casting Screen 24
Figure 18 Casting Captive Portal 25
Figure 19 Standby Low-Power Mode 26
Figure 20 BiQ Remote Control Units (RCU) 27
Figure 21 Set-up Screen Main Menu 35
Figure 22 Home Network Screen 36
Figure 23 Wifi Set-up Screen 36

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Figure 24 Virtual Keyboard 37
Figure 25 Maintenance Screen 38
Figure 26 Casting Config Screen 40
Figure 27 Casting Web Portal 41
Figure 28 Diagnostic Summary Page 43
Figure 29 Diagnostic Home Networking Page 44
Figure 30 Diagnostic Tuner Information Page 44
Figure 31 Box Diag Info page example 47

Tables

Table 1 Special Key Sequences 34
Table 2 Casting Wifi channel plan 40
Table 3 Fields within Diag Info page 46
Table 4 In-house DTT Channel Centre Frequencies 50
Table 5 Definitions, Acronyms, and Abbreviations 52

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1. Introduction

This document provides information and instructions to stage, install, and support Business iQ (BiQ) enabled Set-Back-Boxes (SBBs) for Foxtel. The intended audiences for this information include service provider management and install technicians.

2. The Set-Back-Box

2.1. Overview

The BiQ SBB is a 4k/HD hybrid satellite & terrestrial SBB with Wi-Fi capability designed for the commercial market. The SBB is designed to operate on broadcast satellite, terrestrial, and IP networks carrying TV signals encrypted by Irdeto Cloaked CA. VOD services are carried over Ethernet using Google Widevine encrypt/decrypt. Irdeto encryption and decryption is handled automatically as Irdeto keys are embedded into the BiQ client software loaded on the box. Entitlement Management Messages (EMMs) are sent over a dedicated satellite channel providing the decryption keys to view programming on the SBBs.

2.2. Physical Attributes

The physical outlook of SBB can be seen in Figure 1.



Figure 1 Physical Outlook

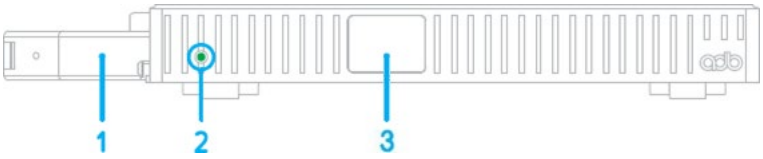


Figure 2 Front Panel View

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Front panel features (see Figure 2):

(1) Embedded Chromecast device to support mobile device screen-casting.
(2) LED Indicator. The SBB is equipped with a dual color LED for the power state indication:
- Green for operation mode, blinks green for Remote Control Unit (RCU) signal reception, LED will remain steady green if the set-back-box boots but is not assigned to a property. The LED turns off once assigned to a property.
- Red for standby mode, displays for initial boot.

Note: If the LED remains on after being assigned to a property, that indicates an issue with the SBB. Constant red typically indicates a hardware issue that may require replacement of the device.

(3) Internal IR (infra-red) receiver (automatically disables when external infra-red receiver fitted)

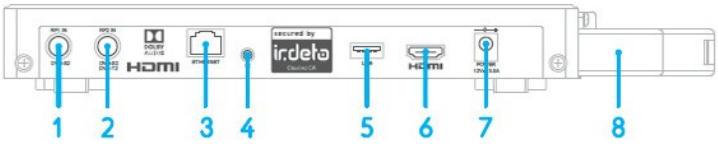


Figure 3 Back Panel View

Rear panel features (see Figure 3):

(1) RF1-IN (DVB-S2) - connector for satellite signal reception.
(2) RF2-IN (DVB-S2, DVB-T2) - connector for satellite and/or terrestrial signal reception.
Note: The SBB box has only 1 terrestrial tuner which is always tied to the external RF2-IN port. 4 satellite tuners are tied through an internal multiplexer to either the external RF1-IN port or the RF2-IN port.
(3) Ethernet port - recommend for BiQ deployments as this is the most reliable method by which BiQ 2-way application traffic flows.
Note: If Ethernet is unavailable in a room, the SBB's Wi-Fi interface must be configured for internet connectivity (see section 10.2).
(4) IR - connector for the external infra-red receiver input port. Since the SBB is typically mounted to the back of a TV — or otherwise kept out of sight an IR Eye Prism Extender Cable is used to pass RCU signals to the SBB.
(5) USB - USB port is used to upgrade the BiQ firmware via a USB stick. Refer to Firmware Upgrades in section 3.3 for more information.
(6) HDMI Out - HDMI output to the TV.
(7) POWER - check the power specifications before connecting the set-back-box to the wall outlet. See Safety Information in section 2.6.
(8) Embedded Google Chromecast device to support screen casting from mobile device.

2.3. Accessories

The list of accessories that are included in the SBB product packaging are as follows:

(1) Power Supply Unit (PSU)
- Wall-mount type
- Outputting 12V DC to the SBB (1.5m cable)

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- Australian AS-3112 AC Plug

(2) Remote Control Unit (RCU), AA batteries included

(3) Cables
- 1 x IR Eye Prism type Extender Cable (1.0m)
- 1 x Ethernet cable (1.0m)
- 1 x HDMI 2.0 cable (1.0m)
  Note: The cable shall be High Speed HDMI version 2.0 (https://www.hdmi.org/), the shorter the better for 4K/UHD TV viewing. At the time of writing the Jonsa™ 5m High Speed HDMI cable (product code GPCH/HV25, FOXTEL-P31094) is the only alternative cable approved by Foxtel.

(4) Mounting Brackets Kit, which allows SBB mounting to standard VESA points on back of TVs (32 inch and larger)

(5) Safety Guide

2.4. Specification

GENERAL	
Hardware platform	ADB Ariel v2
Chipset	M-Star K7P, ARM based, dual core/1400DMIPS, 4K hardware
RAM Memory	2GB DDR4 system memory minimum
Flash Memory	16GB eMMC
Mass Storage for DVR-Lite	eMMC
Front-End	Hybrid Satellite & Terrestrial front-end: • Quad DVB-S2 with DiSEqC 2.1 on RF1-IN / DiSEqC 1.1 on RF2-IN and Unicable SCR • Single DVB-T2 • No RF loop-through
Network Connectivity	(1) Ethernet (10/100 Mbps), (2) Wi-Fi client 802.11ac dualband 2.4GHz/5GHz switchable
Security CA/DRM	(1) Irdeto Cardless Cloaked CA, (2) Widevine Level 1 DRM, (3) HDCP 2.2 for HDMI 2.0b, (4) HW ready for watermarking (Irdeto compatible)
Google Chromecast module	Casting functionality compliant with Chromecast-enabled apps
Software	ADB vuTyme Client
Environmental	Operating Temperature Range from 5 to 45*C
Anti-tamper	Sticker (label/seal) + torx screws
DECODER	
Classification	4K HEVC / VP9 / HDR-10 / HLG
Video Output	• SD: PAL (576i) • HD: 576p60, 720p60, 1080i60, 1080p60 • 4K/UHD: 2160p60
Video Decoders	• MP@L4.1, HP@L4.2, bitrate up to 20Mbps • H.265 (HEVC) Main-10 Level 5.1, bitrate up to 30Mbps • VP9 bit rate up to 20Mbps

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Audio Decoders	• MPEG-1 layer 1, 2, 3 (MP3) • Dolby Digital and Dolby Digital Plus • High-Efficiency AAC (Profile v1)

INTERFACES	
Indicators	2x Color LED (Power State)
Infra-Red	IR 38kHz with support for Motorola RCU protocol
Wi-Fi	802.11ac Dual band 2.4/5GHz switchable
Bluetooth	4.2
RF Inputs	2 x F-Type Connectors (ANSI/SCTE 02 2006 for “F” Port): • One connector dedicated to DVB-S2 satellite contents only (RF1) • One connector for both mixed DVB-S2 satellite and DVB-T2 terrestrial contents (RF2) Input signal range: • DVB-S/S2: 59dBuV to 76dBuV • DVBT/T2: 54dBuV to 77dBuV
HDMI OUT	1x HDMI type A connector, version v2.0b with HDCP 2.2
IR Jack	1 x Mini-Jack 3.5” for IR Extender
Ethernet	1 x RJ-45 for Fast Ethernet (10/100 Mbps)
Power	12V DC Power Jack
USB	1 x USB 3.0

ENCLOSURE	
Dimensions	210 x 235 (291) x 36 mm (W x H x D), (291) in case of Chromecast
Mounting kit	Bracket kit to connect to TV set

2.5. Serial Numbering Scheme

Example:

BFTV A 9 09 12345

Where:

- BFTV = account code
- A = Advanced
- 9 = Last number in manufacturing year (2019 = 9, 2020 = 0)
- 09 = Two-digit week number
- 12345 = Five-digit unit number (from 00001-99999)

2.6. Safety Information

Please review the following key safety instructions before handling and operating the SBB. Also read the safety guide included within the SBB.

(1) The SBB is designed for use only with the supplied external power supply adapter. Do not use any other power supply.

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(2) The order of connecting the power supply is as follows:
- Connect the 12V cable to the SBB first.
- Insert the power supply into the power outlet.

(3) To disconnect the SBB from the power, remove the external power supply adapter from the power outlet (not by removing the 12V cable from the SBB).
(4) Disconnect the power supply from the power outlet before you disconnect any equipment from the rear panel of the SBB.
(5) The product shall be used and installed indoor with a maximum ambient temperature of 45°C.
Note: Operating the SBB above 45°C shall void warranty and reduce the lifespan of the product.
(6) Allow some free space above and around the SBB to ensure a free flow of air around it.
(7) Don't block the ventilation holes of the SBB.

3. Set-Back-Box Installation Process

(1) Gather Required Equipment & Tools (as per section 4.1) prior to arriving on-site
(2) Perform onsite preparation as per chapter 5
(3) Perform in-room installation for each SBB in turn as per:
a. Mounting the Set Back Box in chapter 6
b. Hardware Configuration in chapter 7
c. Software Configuration in chapter 8
d. Programming the Remote Control in chapter 9
e. In Room Smoke Test in chapter 10
(4) Use the vuTyme Management Web Portal (refer to chapter 12) and/or SBB Diagnostic Screens (refer to section 11.5) for diagnostics / troubleshooting as required.

4. Pre-Installation

4.1. Required Equipment & Tools

The following equipment and tool are required to install a SBB:

☑ Laptop for speed testing Ethernet port (if SBB is hardwired to Internet), plus accessing diagnostic portal (refer to chapter 12). *Note: Please request access to the portal from Foxtel if not already granted.*
☑ Mobile device (e.g. smart phone or tablet) with:
  ☑ Latest version of OS
  ☑ Latest version of Google Home application (if casting required by property)
  ☑ Latest version of Ookla internet speed test application
☑ If not already know, obtain special key sequence for Setup and Maintenance screens from Foxtel (refer to chapter 11).
☑ White 14mm circular labels for affixing to bottom of SBB remote control.
☑ USB memory stick with latest SBB firmware downloaded (in case firmware upgrade is required, see section 3.3).
☑ P0 screwdriver (diameter 4.5mm) for spacer screws
☑ P1 screwdriver (diameter 3mm) for small screws
☑ Cordless drill with 5mm step cone drill bit (in case holes in TV brackets need to be expanded to fit mounting screws)
☑ Terrestrial (FTA) & Satellite Digital TV signal meter for measuring signal strength

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4.2. Property Creation

The property where the SBBs will be installed must be built out in the BiQ back-office system and made active by Foxtel before SBB install. Property setup includes creating the property, enabling features, setting up channel line-ups, creating property areas (e.g. Room, Communal, Public Viewing & Digital Signage), configuring broadcast settings (e.g. multistacker or 5-wire), and more.

4.3. SBB Assignment

Foxtel will not allow any SBB on to the BiQ service unless the boxes are preloaded into the BiQ server's inventory. Boxes not preloaded into the BiQ inventory cannot be installed. The process is as follows:

(1) When a new Foxtel customer schedules an install, the SBB order is sent to the Foxtel warehouse vendor (Acer). The Foxtel warehouse picks the SBBs to be installed to a property and sends the SBBs to the property (or install team). The warehouse provides Foxtel with a list all SBB serial numbers sent to the property (or install team).
(2) Using the back-office system Foxtel logically moves all those SBBs to the property into room 0 (designated as the inventory room). This way, when technicians physically install the SBBs, they only have to choose the area and set the room number of each SBB to install them (see section 7.2.1).

4.4. Firmware Upgrades

SBBs shall typically be installed on-site with original factory firmware and then either upgraded to the most current version remotely after the installation by Foxtel Business.

However, SBBs may be remotely upgraded if pre-arranged with Foxtel. SBBs are required to be connected to the Internet via Ethernet or Wi-Fi and powered on. Automatic download will then occur if the SBB has old firmware.

A USB flash drive can also be used to manually initiate an upgrade of software on-site or in a pre-install environment. The firmware file is made available by Foxtel for the technician to download. The technician copies the file to an empty USB memory stick (FAT32 format). The USB stick can then be inserted into the SBB and the on-screen prompts followed to complete the firmware upgrade.

4.5. Accessories

The required length of cables for the installation should be checked prior to installation. If longer than the standard lengths supplied with the SBB (refer to section 2.3) then alternative cables or extenders shall need to be sourced prior to install. See note in section 2.3 if a longer HDMI cable is required.

5. Onsite Preparation

☑ Perform an internet speed test on the property's:
  ☑ Ethernet network (if to be used) at the wall plate a SBB is to be connected to.
  ☑ Wifi network (if to be used) allocated to Foxtel.
  Note: The internet download bandwidth of the speed test is required to be greater than 256Kbps for the SBB to boot. A minimal 512Kbps is required for every 10 SBB. If On Demand is required by the property, a minimum of 2.7Mbps is required

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for the SBB to playback SD quality VOD and 6.3Mbps for Full HD VOD. See section 11.4 for more information regarding bandwidth requirements.

- ☑ Check the DVB-S/S2 satellite signal (if used) at the wall-plate is between 59dBuV and 76dBuV.
- ☑ Check the DVB-T/T2 terrestrial signal (if used) at the wall-plate is between 54dBuV to 77dBuV.
- ☑ Configure one SBB as per Hardware Configuration in chapter 6 and Software Configuration in chapter 7.
- ☑ Contact Foxtel's Business support team on 1300 874 403 to send a Foxtel channels entitlement hit to the SBB.
- ☑ Confirm branding of the Welcome screen UI (property logo, property background image, colours, etc.) is appropriate for the property.
- ☑ If FTA is available at the wall plate confirm the SBB automatically performs a linear TV scan during first installation.
  Note: To initiate a manual scan press the remote control key sequence Red C, Red C, 8, 8, 8, <EXIT>.
- ☑ Tune to every FTA terrestrial channel in channel line-up (ch# 1-99) to check which do not have signal. Compile a list of any channels that do not have signal in order that Foxtel's Business support team can resolve the issues.
  Note: FTA availability is location and antenna dependent. Which FTA channels have no signal can only be determined on-site.
- ☑ Tune to every channel Ch 100 - 999 to test AV playback. Compile a list of any channels that do not have signal in order that Foxtel's Business support team can resolve the issues.
  Note: No channels should display 'No Signal' after receiving their entitlement hit.
- ☑ Initiate playback of an On Demand title (if VOD required by the property) to test VOD audio/video playback.
- ☑ Cast a YouTube video (if casting required by the property).
- ☑ Confirm there are no video or audio issues (e.g. clear user interface, live TV, VOD and cast video pictures, no audio breakup).

6. Mounting the Set Back Box

This chapter explains the recommended methods of installing a SBB dependent of the position and/or size of TV. In all cases the recommended position of the SBB is with cables pointed downwards.

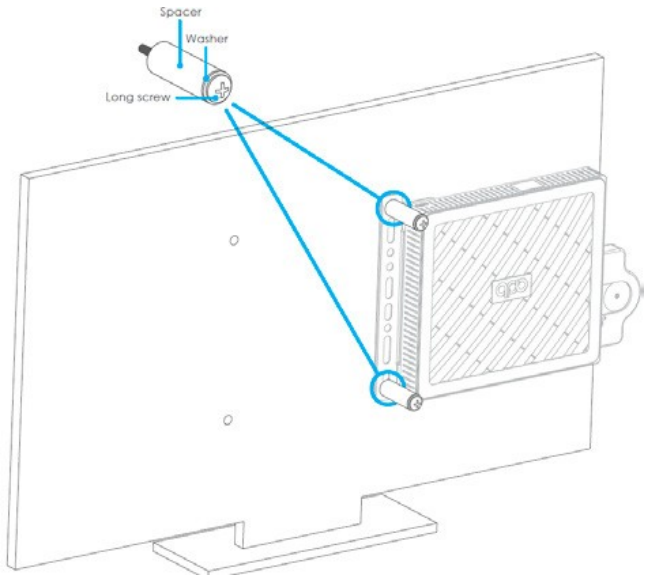
Note: Depending upon your local installation situation, you may want to mount the SBB before or after performing Hardware Configuration in chapter 6 and Software Configuration in chapter 7.

WARNING

In case the SBB is installed within a limited space or with other electrical equipment aside from a TV (e.g. stacked with other SBBs) the following should be observed:

- The environment should be air-conditioned with ambient temperature 25ºC or lower.
- The SBB should be mounted in vertical position, preferably with the side panel having cable connections facing down.
- If the SBB cannot be mounted vertically, it should stand horizontally on a perforated surface to improve air circulation.

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- Additional electrical equipment (e.g. other SBBs) should be placed at a minimum distance of 50 cm from the SBB.
- The ambient temperature halfway between the SBB and other electrical equipment should be confirmed to be no more than 45°C. If over 45°C, extend the distance between units.

6.1. Small Free-Standing TV (est. 32” to 45”)

Stage 1 (Figure 4)

(1) Gather the set-back-box, the large mounting bracket, spacers, washers and screws.
(2) Mount the mounting bracket to the set-back-box as shown.
(3) Secure the bracket to the set-back-box by using the smallest screws (4) in the mounting kit

Figure 4 Installation Stage 1 - Small Free-Standing TV

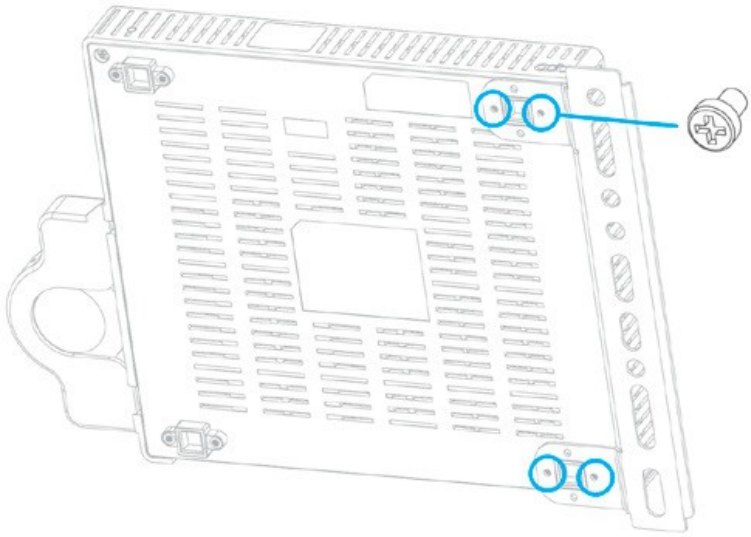
Stage 2 (Figure 5)

(4) Gather 2 long screws, 2 spacers and 2 washers from the mounting kit. These will be used to connect the SBB to the back of the TV.
(5) 3 long screw sizes are provided. If you are unsure which one to use, test screwing each one in the mount holes to determine which size to use.

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(6) Fasten the long screws on the back of the TV in the following order from top to bottom: Long Screw >> Washer >> Spacer >> SBB & Bracket

Figure 5 Installation Stage 2 - Small Free-Standing TV



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6.2. Large Free-Standing TV (est. +45")

Stage 1 (Figure 6)

(1) Gather the set-back-box, both mounting brackets, mounting cylinders, washers and screws
(2) Mount the mounting brackets to the set-back-box.
(3) Secure the brackets to the set-back-box by using the smallest screws in the mounting kit.

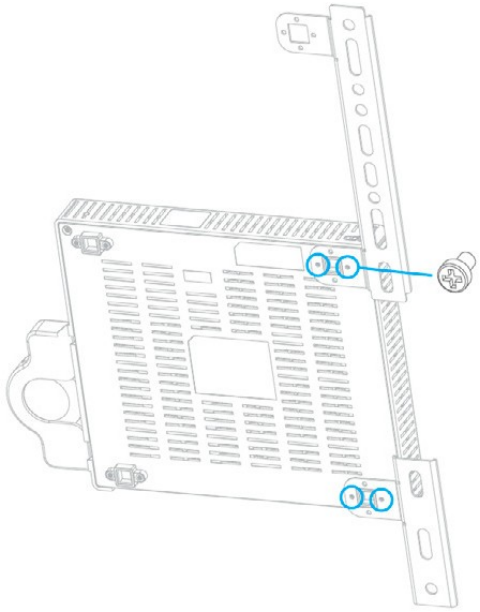


Figure 6 Installation Stage 1 - Large Free-Standing TV

Stage 2 (Figure 7)

(4) Gather 2 long screws, 2 spacers and 2 washers from the mounting kit. These will be used to connect the SBB to the back of the TV.
(5) 3 long screw sizes are provided. If you are unsure which one to use, test screw in the mount holes to determine which size to fits.
(6) Fasten the long screws on the back of the TV in the following order from top to bottom: Long Screw >> Washer >> Spacer >> SBB & Bracket

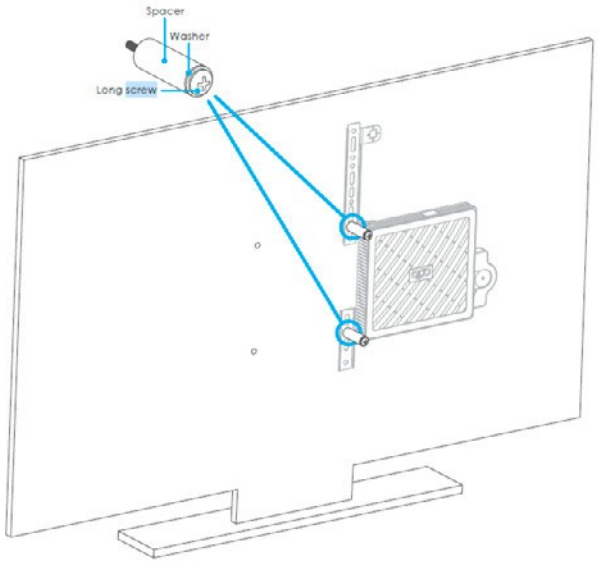


Figure 7 Installation Stage 2 - Large Free-Standing TV

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6.3. Wall Mount TV

Stage 1

(1) Whether mounting to a small or larger TV, gather 2 more long screws, 2 spacers and 4 washers from the mounting kit.
(2) You will have a total of 4 screws, 4 spacers, and 6 washers to install.
(3) Mount items to the TV in the following order (from top to bottom).
   a. SBB Side (not shown in Figure 8): Long Screw >> Lock Washer >> Washer >> Wall Mount Rail >> Spacer >> SBB Mounting Bracket(s)
   b. Non SBB Side (shown in Figure 8): Long Screw >> Lock Washer >> Washer >> Wall Mount Rail >> Spacer >>Washer

Note: If the wall-mounting kit excludes lock washers, exclude them from these instructions.

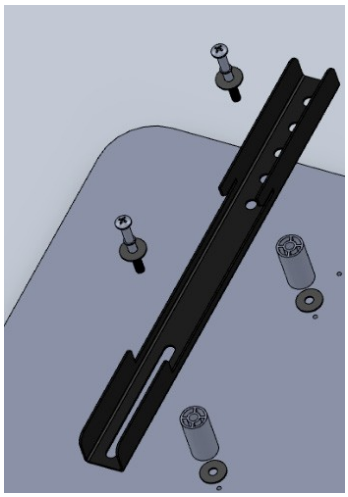


Figure 8 Installation Stage 1 - Wall Mounted TV

Stage 2 (Figure 9)

(4) Mount the TV to the main mount plate and then to the wall.

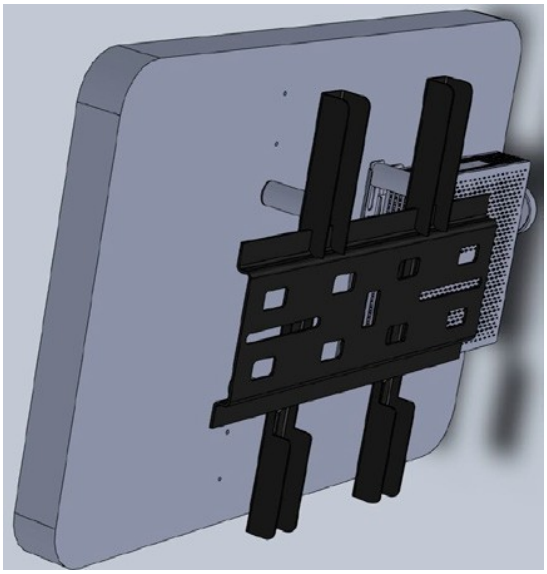


Figure 9 Installation Stage 2 - Wall Mounted TV

Note: The SBB is installed between the TV and the TV's mounting bracket.

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7. Hardware Configuration

Follow the procedures in the subsections bellow to connect the SBBs on-site.

7.1. RF Use Cases

It is important to understand the satellite and terrestrial setup at the property as well as the wiring in the property prior to installation. Depending upon what this configuration is will determine how the SBB shall be connected. Furthermore, this configuration determines what settings need to be made for the property in the BiQ back-office system. The key questions to answer are the following:

- Is there property using Ethernet IP for live TV video distribution to the wall plate (via the vuStreamer IPTV Headend)? If so, skip this section unless there is FTA or in-house terrestrial (COFDM) TV to the wall plate, as there are no RF connections to be made.
- Is the property distributing FTA or in-house terrestrial (COFDM) TV to the wall plate? If it is, that means that this signal is either on its own RF cable or may be combined (diplexed) with a satellite lateral RF cable.
- Is the property distributing satellite using a Multi-stacker (combining satellite laterals to one RF cable) to the wall plate? This means that only one RF cable connects to the SBB for satellite live TV reception.
  Note: FTA terrestrial TV may also be diplexed into this cable.
- Is the property wired for and using dual satellite laterals (Horizontal [18V] + Vertical [13V])? This means that there are two satellite RF cables for each room that connects to the SBB.

Find the use case below (1 to 8) that applies to your specific installation and use the RF.

Note: The broadcast setting in the BiQ back-office should be configured by Foxtel Business to reflect the use case before on-site installation.

Use Case 1: Multi-stacker Satellite Combined (Diplexed) with Terrestrial

Description: Single lateral (with horizontal + vertical stacked) for full Foxtel satellite service with terrestrial stations diplexed on same feed

Connections: Connect the multi-stacked satellite RF cable that also combines the terrestrial stations to RF2; RF1 is unused

Use Case 2: Multi-stacker Satellite + Terrestrial

Description: Single lateral (with horizontal + vertical stacked) for full Foxtel satellite service. SBB terrestrial on a separate RF cable for local over-the-air services

Connections: Connect the multi-stacked satellite RF cable to RF1, and connect the terrestrial RF cable to RF2

Use Case 3: Dual Satellite Laterals + Terrestrial

Description: Two laterals for full Foxtel satellite service (horizontal [18V] + vertical [13V]). Terrestrial diplexed on 1 satellite lateral for local over-the-air services

Connections: Connect one RF cable to RF1, and connect the other cable that carries the diplexed terrestrial signal with a satellite lateral to RF2

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Use Case 4: Dual Satellite Laterals No Terrestrial

Description: Two laterals for full Foxtel satellite service (horizontal [18V] + vertical [13V]). No terrestrial.

Connections: Connect one RF cable to RF1, and connect the other cable to RF2

Use Case 5: Multi-stacker Satellite Only (No Terrestrial)

Description: Single Lateral (with horizontal + vertical stacked) for full Foxtel satellite service

Connections: Connect the multi-stacked satellite RF cable to RF2; RF1 is unused

Use Case 6: Terrestrial (COFDM) Only

Description: No satellite. Terrestrial on a separate RF cable for local over-the-air services.

Connections: Connect the terrestrial cable to RF2; RF1 is unused.

Use Case 7: Single Satellite Lateral Combined (Diplexed) with Terrestrial

Description: Single lateral (with horizontal) for full Foxtel satellite service without V-pol with terrestrial stations diplexed on same feed

Connections: Connect the satellite RF cable that also combines the terrestrial stations to RF2; RF1 is unused

Use Case 8: Single Satellite Lateral + Terrestrial

Description: Single lateral (with horizontal) for full Foxtel satellite service without V-Pol. SBB terrestrial on a separate RF cable for local over-the-air services

Connections: Connect the satellite RF cable to RF1, and connect the terrestrial RF cable to RF2

7.2. Cable Connections

Connect the SBB in the order listed below, as illustrated in Figure 10.

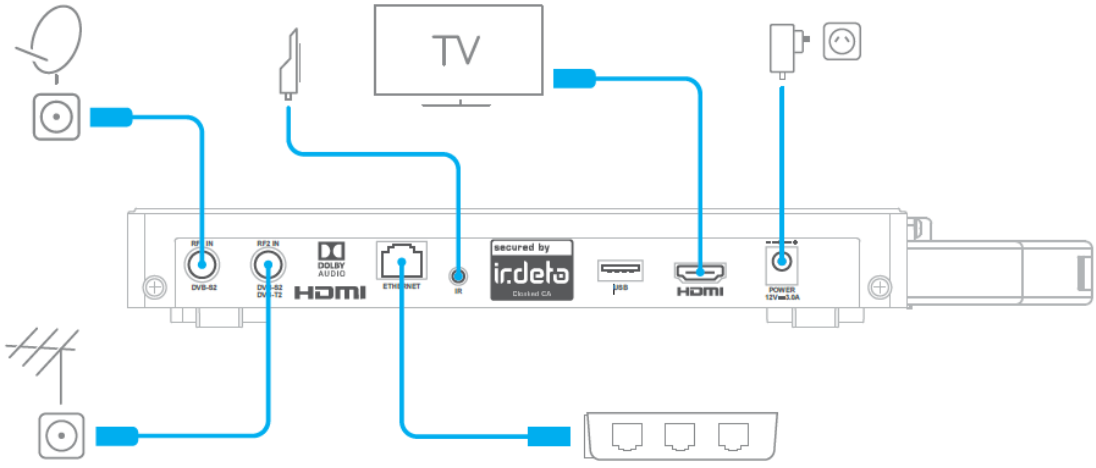


Figure 10 SBB Connections (RF Use Case 2)

(1) Connect RF cable(s) for the appropriate use case from the previous section.

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(2) Connect the supplied Ethernet cable from the SBB's Ethernet port to Ethernet port in the room (if used).

(3) If the SBB's internal IR receiver does not have line-of-sight to the room, which shall be the case if the SBB is mounted behind a TV, it is mandatory to connect the IR prism dongle into the IR port on the SBB. Affix the prism end of the IR dongle to the TV where it shall have line-of-sight to the room by following the instructions below:

- The IR prism should normally be mounted facing downward so the 45º angle is facing toward the back of the TV and the wire is coming out towards the top (see Figure 11). However, dependent on the position and thickness of the TV (4cm and above) the location may need to be adjusted to provide line-of-sight

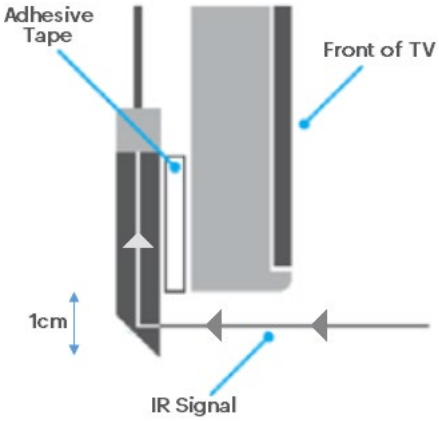


Figure 12 Recommend Position of IR Prism

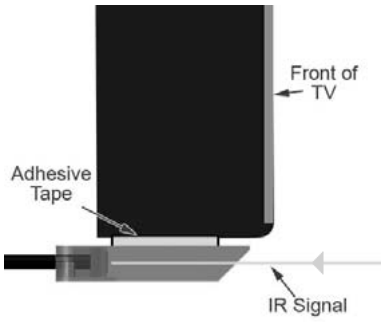


Figure 11 Alternative Position of IR Prism for thicker TVs (4cm and above)

to the RCU, in which case the IR prism can alternatively be mounted to the bottom of the TV so the 45º angle is facing down and the wire is coming out toward the back of the TV (see Figure 12).

- If mounted to the back of the TV (Figure 11), approximately 1cm should protrude below the TV and have clear, unobstructed, line-of-sight access to the room. If mounted as per the bottom of the TV (Figure 12), the prism should not protrude out further than the front of the TV.
- The chosen mounting area must be clean and dry. If not clean and dry, use a wipe and make sure any dirt or grease has been removed, and that the cleaned area has had time to dry.
- Peel the backing off of the tape and adhere it to the TV in the appropriate location. Handle the tape by the edges only, do not touch the tape directly with your fingers.

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- Push firmly and hold in place for 10 seconds, bond strength is dependent on the pressure applied. 20 minutes equals 50% bond strength. It will take 72 hours for the tape to adhere completely with 100% bond strength.

- Route the wire so there isn't any pressure pulling on the bonded prism dongle. Make sure it is secure and neat, with no excess wire seen from the front of the TV.

  Important:

  - If the IR extender cable is not firmly clicked into place at both ends (into the prism and SBB's IR port) the SBB shall not receive any IR commands. This is a common installation mistake.
  - An infrared signal is light and as such travels in a straight line. Any obstructions in the path of the IR signal from the RCU to the IR receiver may prevent reliable operation of the SBB. In is very important to ensure the IR receiver has direct line-of-sight to the room during installation (i.e. it is visible from the front of the TV).
  - Mount to the back or bottom of TV, do not mount the Remote Prism on the front bezel of the TV.

(4) Connect the HDMI cable from the SBB to the TV's default HDMI port on power up (typically HDMI 1).

Important: For 4K/UHD video reception the SBB shall be connected to a HDMI port on a 4K TV that supports HDCP 2.2, otherwise Foxtel's 4K channels will be blocked by the SBB and an "E210-0 - Currently unable to view this channel" message displayed.

Note: If the TV does not power up to the required HDMI port the TV settings shall need to be reconfigured (esp. the case with hospitality model TVs).

(5) Connect the power in this order:
   a. connect the power supply to the back of the SBB;
   b. connect the power supply to the power outlet.

Note: Reverse the order when disconnecting the SBB from power.

(6) As the SBB boots, observer the LED behaviour:
   - Green for operation mode, blinks green for RCU signal reception, LED will remain steady green if the box boots but is not attached to a property. The LED turns off once attached to a property.
   - Red for standby mode, displays quickly for initial boot.

   Note: If the LED remains on after being assigned to a property, it may indicate an issue with the SBB. Constant red typically indicates a hardware issue that may require a replacement of the device.

(7) Refer to chapter 7 software boot sequence and behaviour on the TV screen thereafter.

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8. Software Configuration

8.1. Boot Screens

When the SBB boots the splash screen in Figure 13 is displayed.



Figure 13 Boot Screen

Boot progresses is shown as follows:

(1) 1 dot means the Booter software has been launched.
(2) 2 dots mean that Drivers plus Middleware software has been launched.
(3) 3 dots mean that the client application/UI (user interface) software has been launched.

If a SBB boots successfully one of the screens in the sections below shall be displayed, dependent on if the SBB has been previously configured for the property.

Note: For the client application to load successfully internet connectivity must be established with the BiQ server for the SBB to obtain its configuration. Refer to section 10.3.1 to configure the SBB for either Ethernet (default) or section 10.2 for Wi-Fi connection to the internet. Refer to section 11.4 for internet bandwidth requirements for the SBB to successfully boot and expected boot time.

8.2. Installation Screens

8.2.1. Room Assignment Screen

Spare SBBs at a property are assigned to room 0. They are moved from the spare inventory to the desired room using the room assignment screen. After the SBB boots the room assignment screen in Figure 13 should automatically be displayed.

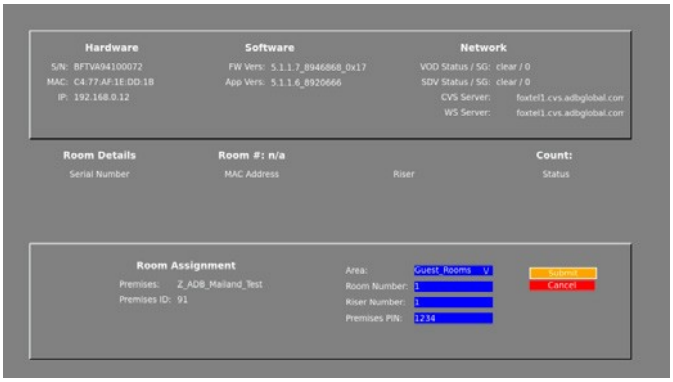


Figure 14 Room Assignment Screen

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(1) Select an Area for the SBB (e.g. Room, Communal, Public Viewing or Digital Signage). Press the OK key to open the list of areas and use the arrow buttons to select the desired area. Press OK again to confirm selection. **IMPORTANT**: Select Communal for a private viewing space (e.g. a lounge or cinema in an aged care residents) and Public Viewing for a space open to the public (e.g. a bar or restaurant).

(1) Unless otherwise instructed enter the room number as it physically appears on the door. **IMPORTANT**: Remove the default leading zero by pressing the left button on the remote if the room number does not have a leading zero on the door. For locations without a room number (such as private communal and/or public viewing areas) use the name the customer has given to the space (e.g. “Lounge”, “Bar”. etc). Use the following numbering convention scheme if no name is given by the customer: 60000 and up – private viewing spaces, 70000 and up – public viewing spaces; 80000 and up – restaurant or bar-restaurant; 90000 and up – standalone bar.
Note: Room numbers must be unique across areas. For example, there cannot be a room 100 in a Room area and a room 100 in a Public Viewing area. The install screen will alert you if you try to use the same room number in different areas.

(2) The riser number is optional and can be left as default, or a number entered as appropriate.

(3) Enter the premises PIN. If not 1234 (default), contact the Foxtel Business support team.
Note: Foxtel requires all SBBs to be preloaded into the BiQ back-office system for security. If a SBB is not pre-loaded you will get an error when you Submit. Refer to section 3.2 for more information.

8.2.2. Premises Assignment Screen

If the premises assignment screen in Figure 14 is displayed, contact Foxtel Business to move the SBB to the desired premises. Once the SBB has been moved to a premise, the room assignment screen in Figure 13 should automatically be displayed. Assign the SBB to a room as per section 7.2.1.

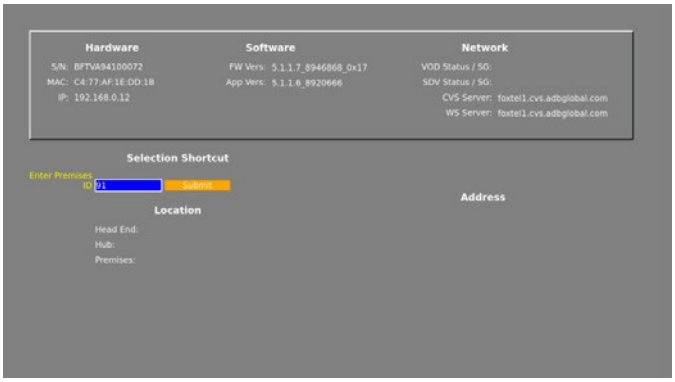


Figure 15 Premises Assignment Screen

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8.3. Main Application Screens

8.3.1. Welcome Screen

Once a SBB is assigned to a room (as per 7.2.1) a SBB in the 'Room', 'Communal' or 'Public Viewing' area should boot to the Welcome screen (see Figure 15).

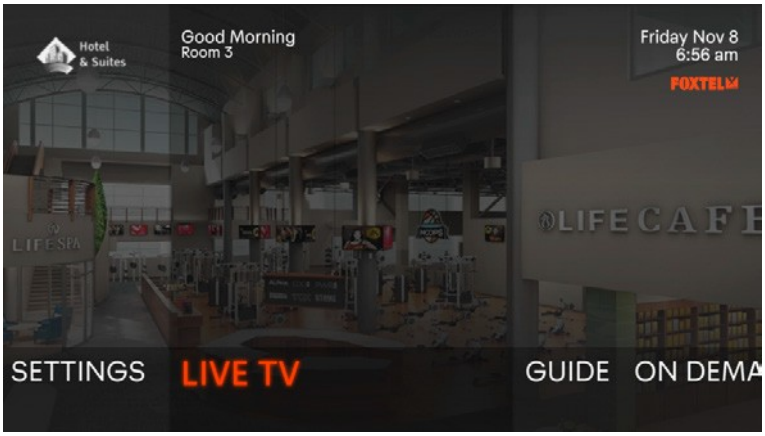


Figure 16 Example Welcome screen

If casting is required for the property (typically the case for SBBs in the 'Room' area) refer to section 10.4.1 for how to configure the SBB and embedded Google Chromecast.

8.3.2. Casting

Foxtel's casting solution prevents a guest in one room casting to a TV in another room. A SBB generates a WiFi AP (Access Point) when a guest selects the "Casting" option from the Welcome screen's main menu on the TV. Once selected a casting screen displays instruction on how a guest connects their mobile device to the SBB unique WiFi AP (see Figure 16).



Figure 17 Casting Screen

Since more than one guest may checked into a room, multiple guest mobile devices can connect to the WiFi AP, but no mobile devices shall have internet access. Once

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a guest connects to the WiFi AP a captive portal (casting.tv) is displayed on the guest's mobile devices requesting a PIN code (see Figure 17). A guest can start casting to Google Chromecast once they enter a one-time use PIN from the casting screen on the TV into the captive portal on their mobile device. Any other mobile devices are automatically disconnected from the WiFi AP once a guest enters the correct PIN.

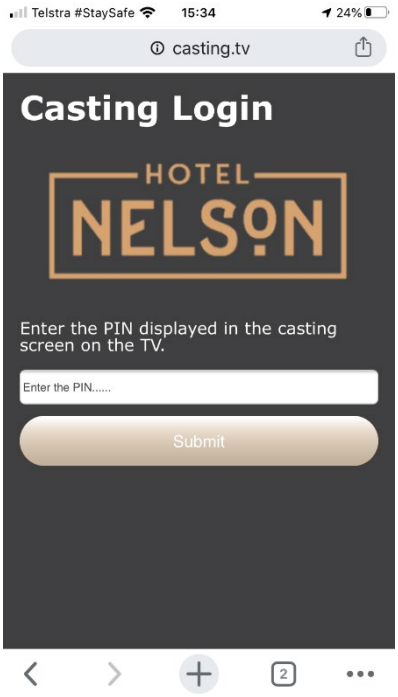


Figure 18 Casting Captive Portal

During a casting session the guest shall have limited internet access on their mobile device via the WiFi AP. Internet access through the WiFi AP allows a guest to control the casting session on the integrated Chromecast (e.g. play/stop/pause streaming, change casted content or the casting app uses), whilst still being able to receive mails and remain on social media. The internet access is limited to 2Mbps. The bandwidth is throttled back intentionally to force the guest to use the property's guest WiFi network for any significant internet usage, plus save as much of the internet bandwidth available to the SBB as possible for the Chromecast device whilst casting.

A guest's mobile device is disconnected from the WiFi AP one minute after casting is exited on the TV (e.g. when the guest switches to watching FTA or Foxtel TV channels, plays VOD or uses other features). A minute's grace allows the guest to resume casting if they inadvertently exited casting.

During SBB installation the channel for the Wifi AP (1 to 7 for 2.4GHz, and 36, 40 or 44 for 5GHz) is selected to avoid interference with other Wifi APs within the property (e.g. guest Wi-Fi). Refer to section 11.2.3 for how to configure the SBB and embedded Google Chromecast for casting.

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8.4. Standby Low Power Behaviour

If no remote-control key is pressed within 5 minutes (“Welcome Screen Timeout”) after power on, the SBB will prompt the user to continue watching (“Inactivity Dialog Box”). Otherwise if a remote-control button is pressed within 5 minutes, the SBB will not prompt the user to continue watching TV until there has been 4 hours (“Inactivity” timeout) of no remote-control activity.

If there is no remote-control activity after the prompt (“Inactivity Dialog Box”) for a further 5 mins (“InactivityConfirm” timeout), the SBB shall enter standby mode (idle state). Figure 18 illustrates how the SBB enters and exits standby low-power mode.

Important: Please contact Foxtel Business to request the standby state be disabled (“Keep-Alive”) in the BiQ back-office for SBBs assigned to Communal and Public Viewing areas.

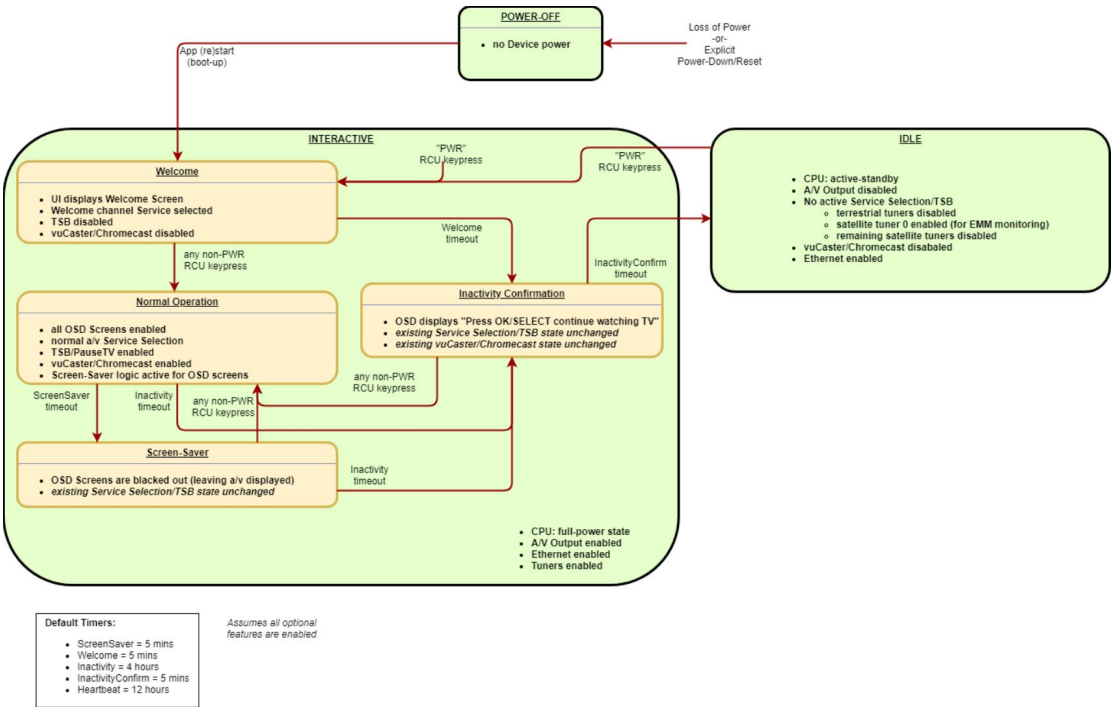


Figure 19 Standby Low-Power Mode

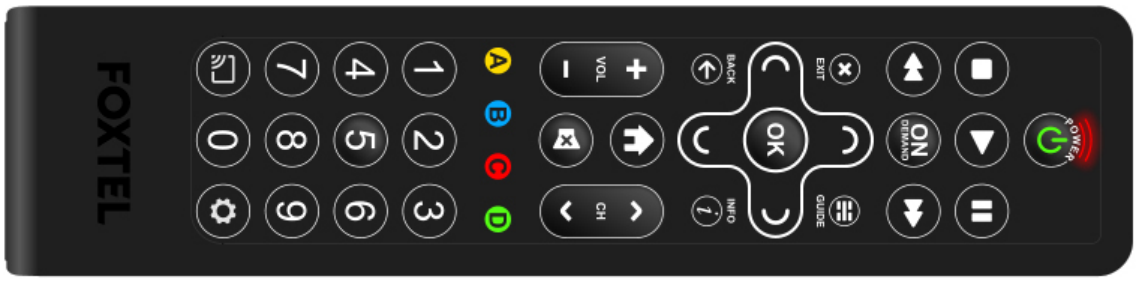
9. Remote Control

9.1. Programming the Remote



1st Generation (without Foxtel logo)

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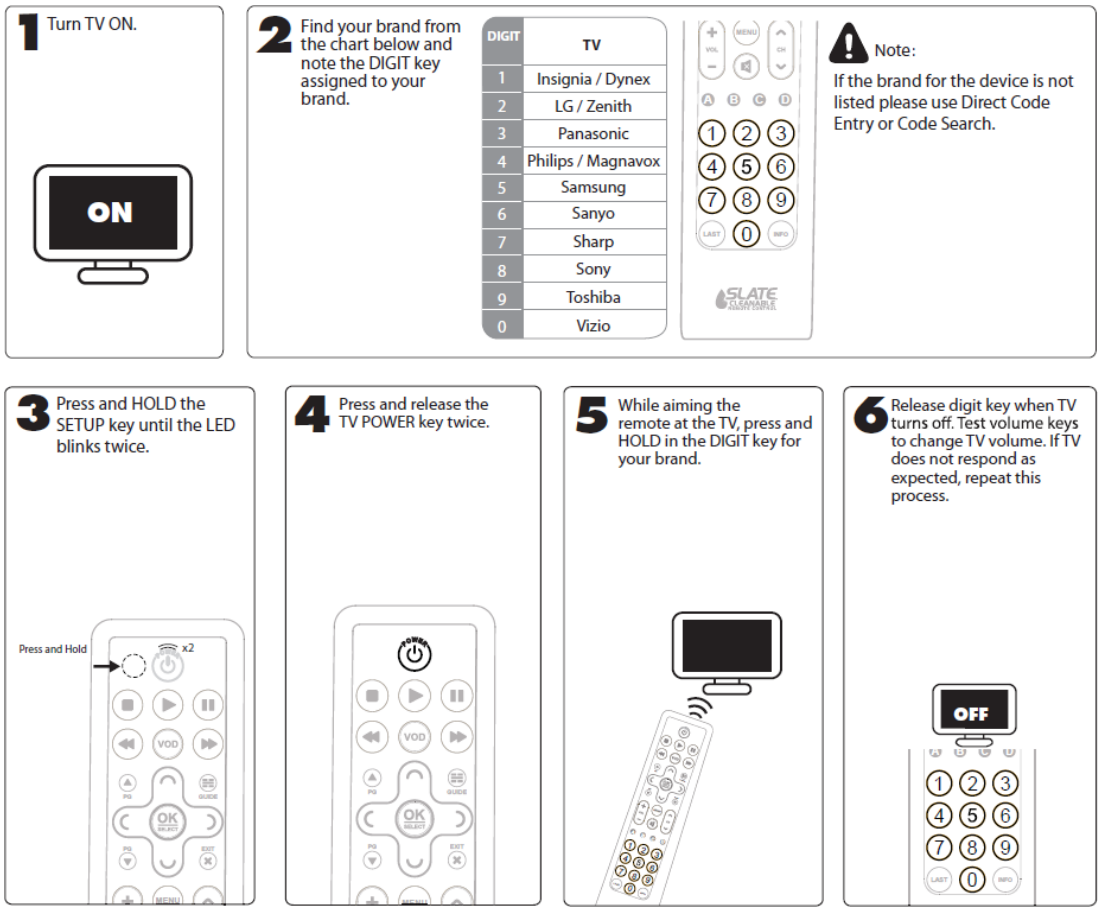
2nd Generation Remote Control (with Foxtel logo)

Figure 20 BiQ Remote Control Units (RCU)

For the BiQ remote control unit (see Figure 10) to control the Power, Mute and Volume on the TV, it must be programmed to support the specific TV using one of the methods described in the sections below. By default, the remote control is pre-programmed for a Samsung TV.

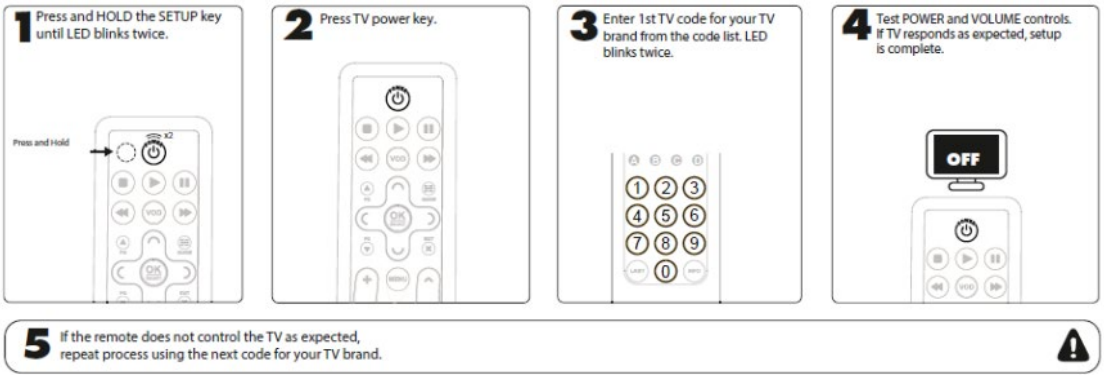
Important: After programming the remote the smoke test in section 9.1.6 should be performed to confirm correct operation, plus a white circular 14mm label affixed to the bottom of the remote control and the room number written on it. The label is to avoid the remote control being swapped to another room, which may have a different make/model of TV.

9.1.1. Setup Method 1 – Popular Brands



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9.1.2. Setup Method 2 – Direct Code Entry



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Codes: TV

MUG-8200S-A06

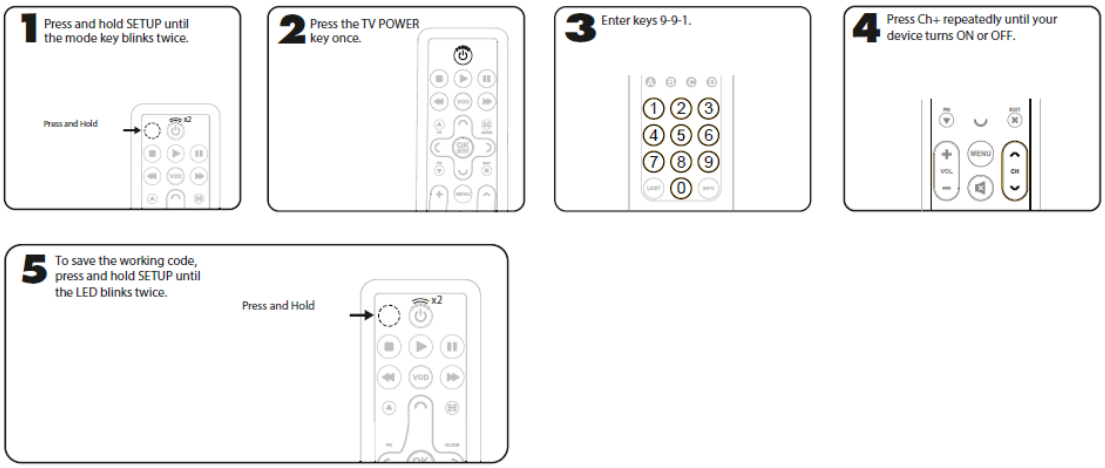
Aaxa	03634
Acer	01339
Admiral	00463, 04030, 00179
Advent	00761, 01570
Affinity	03717, 03716, 03577
Aiwa	01362
Akai	01675, 00702, 01688, 01207, 01385, 01692, 01935, 01690, 02232, 00765
Akura	01498, 01687
Alaron	00179
America Action	00180
Anam	00180
AOC	01589, 01365, 02014, 02087, 01590, 02479, 02621, 03707, 04101, 01089
Aomni	01623
Apex Digital	00765, 02397, 01943, 00890, 01217
Ario	02397
Asus	03340
Atvio	03638, 03636, 03653, 03654, 03657
Audinac	00180
Audiosonic	01675
Audiovox	00875, 01865, 01951, 00180, 02413, 00846, 01564, 00802, 01766, 03065, 01937, 01769, 01276, 02121, 02513, 00451, 00623
Aumark	00060
Auria	02087, 02277
Axion	01937, 03704
B & O	01620
Bang & Olufsen	01620
Barco	00556
Baysonic	00180, 00236, 00463
Bell & Howell	00154
BenQ	01315, 01562, 01756
BGH	04029, 00898, 02414, 04070, 00876, 04028, 04030
Blu:sens	02735
Blue Light	03655
Blue Sky	00556, 01254
Boigle	01696
Bradford	00180
Britânia	02414
Broksonic	00463, 01938, 01935, 01892, 00236
Byd:sign	01311
Candle	00186
CCE	03782, 00623, 04092
Celera	00765
Champion	01362
Changhong	00765
Cineon	03951
Cineral	00451
Citizen	00186, 01935, 01672, 00060, 01669, 00451
Clarion	00180
Claris	03807
Coby	03478, 03627, 02315, 02344, 02306, 02314, 02345, 02349, 02350, 03202, 02340, 03629, 01634, 02338, 01538, 02326, 03493, 02348, 02346, 02347, 03646, 02560, 02017, 02494
Commercial Solutions	01447
Conia	01498, 01687
Contec	00180
Continental	02357
Cornea	03677
Craig	00180, 03423
Crosley	03115
Crown	00180
Curtis	03577, 02855, 02466, 02352, 02397, 03895, 02559, 01326, 03636, 02859, 03228, 03382, 03939, 04035
Curtis Mathes	00060, 00451, 00702, 01661, 00145, 00154
CXC	00180
Cytron	01326
Daenyx	00179, 00180
Daewoo	01661, 00623, 00451, 00661, 01909, 03115, 00154
Daytron	00180
Dell	01264, 01863, 02491, 01080
Denon	00145
Digital Lifestyles	01765, 01822
Disney	01892, 01665
Dumont	00017
Durabrand	00463, 01570, 01665, 00178, 00180
Dynex	02049, 02184
Electric Mirror	03166, 03167
Electrograph	01755, 01623
Electrohome	00463, 01670, 01570, 01672
Electron	02855
Elektra	00017, 01661
Element	03559, 01687, 02183, 02964, 03907, 01886
Elite	03867
Emerson	01864, 01394, 01886, 00463, 01963, 00236, 00180, 00179, 00178, 01661, 00623, 01665, 02183, 00451, 01909, 00154, 03559
Emprex	01422, 01765
Encross	00876
Envision	01589, 01365, 02087, 02014
Epson	01122
ESA	01963
Fair Mate	01326
Favi	03382
Fisher	00154, 01362
Fluid	02964, 03907
Fujimaro	01498, 01687
Fujitsu	00809, 00853, 00186, 00179
Fujitsu Siemens	00809
Funai	00180, 01394, 01963, 00179, 01864
Futuretech	00180
Gateway	01755, 01756
GE	00451, 01447, 00051, 00178, 00765
General Electric	00451, 01447, 00051, 00178, 00765
GFM	01963, 01665, 01864, 01886
Gibralter	00017
Go Video	00060
GoldStar	00178
GPX	00179, 03402, 02617, 02784
Gradiente	01804, 01369, 01029
Grunpy	00179, 00180
H & B	01366
Haier	02309, 01753, 03382, 02293, 02494, 02690, 01570, 03204
Hallmark	00178
Hanns.G	01783
Hannspree	01348, 01351, 01745, 01783, 01352
Harley Davidson	00179
Harvard	00180
H-Buster	03620
Helios	00865
Hello Kitty	00451
Hewlett Packard	01642, 01502, 01494, 01089, 02540, 03404
Hidear	03817
Himitsu	00180, 00779
Hisense	02183, 01660, 01314, 04029, 03382
Hitachi	01643, 00145, 01145, 03644, 03639, 01576, 01500, 00797, 02433, 02756, 03255, 00679, 02824
HP	01642, 01502, 01494, 01089, 02540, 03404
Hyundai	03418, 01219
iLo	01665, 01684, 01990, 01603, 01286, 01394
InFocus	01366
Initial	01990, 01603
Insignia	02049, 01564, 01326, 02002, 01892, 01204, 01423, 01517, 00463, 01963, 02751, 03227, 02416, 01385, 01660, 02417, 02184
Inteq	00017
iRIS	02189
IRT	00451, 01661
iSymphony	03382, 03094, 03863
ITT Nokia	00180
JC Penney	00060, 00178, 00051, 00156
JCM	02189, 02256
Jensen	03204, 01326, 00761, 01299
JVC	01774, 01601, 02321, 03650, 02118, 03854, 02517, 02578, 01670, 00463, 04070, 02264, 01892
KDS	01498, 01687
KEC	00180
Ken Brown	00236, 00463
Kingston	03284
Kioto	00785, 00556
Klegg	01366
KLH	00765
Konka	01385, 01404
Kost	01483
Kreisen	00876
KTV	00180
Lasonic	03198
Lexus	03638, 03654, 03657
LG	01423, 03941, 00178, 03404, 01265, 02864, 02612, 00017
LodgingStar	03147
LXI	00154, 00156, 00178, 00017
M&S	00236
MAG	01687, 01498
Magnavox	01454, 01963, 02597, 01054, 02492, 00186, 03708, 00179, 01990, 01198, 01856, 00230, 01365, 01931, 03518, 00051, 02655, 00802, 01254, 01755, 01867
Marantz	01054, 01154, 01398, 00704, 01454, 00556, 01714
Matsushita	00051
Maxent	01755, 01757, 01714
Megatron	00145, 00178
Memorex	00463, 00179, 01570, 01670, 01892, 00178, 01665, 00060, 00154, 01938, 00150, 01927, 02739
MGA	00150, 00178
Microsonic	01326, 02483, 03328
MicroTEK	03951
Midland	00017, 00051
Mintek	01603, 01990
Miray	03309, 03321, 03322
Mitsubishi	01250, 00150, 01797, 00178
Mitsui	03658, 03654, 03638, 03652, 03656, 03657, 03673
MTC	00060
Multitech	00180
Mx Onda	01498, 01687
NAD	00156, 00178
Naoki	01540, 02357
Naxa	02104, 02735, 03382, 03154
NEC	01797, 03257, 01704, 01398, 00704, 00876, 02293, 03862, 02026
NetTV	01755, 02753
New Acoustic Dimension	00156, 00178
NEX	03861
Nexus Electronics	02183
Nikko	00178, 00017, 00154, 00156
Nimbro	02104
Noblex	01362, 03803, 04100, 00154, 04030
Nokia	00180
Norcent	01365, 01589, 01591, 01089, 01590, 01745
Nordmende	03419, 03835, 03861, 03134, 03327, 03767
Norwood Micro	01286
NuVision	02158, 01657
Olevia	01610, 01240, 01331, 01144
Onwa	00180
Optimus	01927, 00154, 00679
Optique	02189
Orion	00463, 00236, 01938, 00179, 01892, 03650
Otic	01498, 01687
Panasonic	01480, 01291, 02264, 01636, 01927, 01946, 02273, 00051, 00178, 00060, 00145, 00150, 00154, 00156
Panavox	04057, 03835
PARK	01376, 02104, 02194, 02202
Penney	00060, 00178, 00051, 00156
Philco	01665, 00451, 02414, 03426, 01963, 01362, 01661, 01394, 00179, 01029, 00145, 03427, 00186, 00463, 03639, 03022
Philips	01867, 01454, 03396, 02597, 00690, 01054, 02652, 00556, 00230, 02622, 02492, 00017, 01856, 02940, 03565, 01365, 01990, 02740, 01394, 01483, 00810, 01154, 02768, 02986
Pioneer	00679, 01260, 01457, 03254, 01398
Planar	01589
Polaroid	01498, 01769, 01538, 01276, 03942, 01687, 01385, 01767, 04035, 02121, 01766, 01762, 00765, 00865, 01314, 02063, 01286, 01326, 02002, 02120, 01826
Portland	01661, 00451
Power Acoustik	01865
Prima	01753, 00761
Prism	00051
Proscan	01447, 02256, 02183, 03577, 03382, 03895, 03717, 02147, 03636
Proton	00178
Proview	01687, 01498
Pulsar	00017
Pyle	02196, 02641
Pyle Home	02196
Quasar	00051, 01927, 01291
RadioShack	00180, 00178, 00154
RCA	02746, 01447, 02434, 02932, 02247, 03577, 02187, 01781, 03382, 01958, 00679, 02403, 01661, 02429, 03717, 02002, 02183, 02855, 03147, 03419, 03426, 00051, 00060, 00090, 01385, 03636, 03938
Realistic	00154, 00180, 00178
Record	00230
RevolutionHD	01623
Runco	01398, 00017
Sampo	01755
Samsung	02051, 03993, 00702, 00060, 02814, 00766, 02733, 03970, 02596, 00814, 00178
Sansei	00451
Sansui	00463, 01892, 01935, 01670, 03564, 01409, 01938, 03559
Sanyo	01142, 01362, 00154, 03864, 03967, 00088
Sceptre	02528, 02337, 01360, 01217, 00878, 01599, 02506
Scotch	00178
Scott	00236, 00178, 00179, 00180
Sears	00154, 00156, 00178, 00179
Seiki	03953, 02964, 03559, 03560, 00178
Seiko Epson	01122
Seleco	01351
Semivox	00180, 00236, 00463
Semp	01743, 03793, 00156
Semp Toshiba	01743, 03793, 00156
Sens	01865
Serie Dorada	00180, 03814, 00156, 00178
Sharp	02360, 01393, 03867, 01587
Sherwood	01399, 03061
Sigmac	03477, 03423
Silo	03794
Silo Digital	03794
Simpson	00186
Skyworth	01799
Solé	01623, 01483, 01366
Sony	00810, 01825, 02736, 01300, 01685, 01786, 01791
Soundesign	00178, 00180, 00179, 00186
Soyo	01520, 01826
Space Tek	01696
Spectroniq	01498, 01687
Speler	04041
SSS	00180
Starlite	00180
STI	03793
SunBriteTV	02337, 01420, 02528, 01435, 01610
Superscan	00864
Supersonic	03593, 03877, 03154, 02104, 03595, 01753, 02784, 03894, 03204
SVA	00865, 01963
Sylvania	01864, 01886, 01394, 01963, 01665, 01314, 03536, 00186, 01931
Symphonic	01394, 00180
Syntax	01610, 01240, 01144, 01331
TAG	03498
Taki	01540
Talent	00178
Tatung	01286, 01756
TCL	02434, 03183, 03426, 02414, 02429, 02403
Technics	00051, 00017
Technol Ace	00179
Techwood	00051
Teknika	00186, 00179, 00180, 00060, 00150
Telefunken	02414, 00702, 04025
TMK	00178
TNCi	00017
Tophouse	00180, 01385
Tosaki	01540, 02357, 01404
Toshiba	01524, 02724, 00156, 02006, 03134, 01945, 01935, 01936, 02684, 01743, 00553, 01704, 01343, 00060, 01265, 01369, 01508, 00154
Toshinaer	03576
TruTech	01665
TVS	00463
US Logic	01286
Venturer	01865
Victor	00145, 00150, 00156, 00186
Vidikron	01398
Vidtech	00178
Viewsonic	02014, 02745, 02087, 02049, 00864, 01627, 01755, 01330, 01542, 00797, 00857, 02111, 02277, 00885, 01511, 01564, 01578, 01742, 01365
Viore	02352, 03382, 02104, 03863, 03094, 01684, 01811, 03159, 01207
VisionQuest	03380
Vivitek	01369
VIZIO	01758, 03758, 02757, 02707, 00864, 00885, 01756
Vuon	03418
Wards	00156, 00017, 00178, 00051, 00179, 00060, 00154, 00180, 00186
Waycon	00156
Westinghouse	01712, 03579, 03382, 00885, 01300, 01577, 03470, 02293, 03094, 00890, 01282, 02195, 02397, 02499, 03908, 00451, 01217
White Westinghouse	00623, 01661, 01909, 00463
Wyse	01365
Yamaha	00797, 01576
Zenith	00017, 00178, 01145, 01265, 00145, 01423, 02612, 01661, 01365, 01909, 00463
Zonda	00779

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Additional 2nd Generation TV Codes

Samsung	UA75RU7100WXXY	5347	LG	50UM7600PTA	4371	Kogan	KALED75JU8100GA	4291
Samsung	UA65JS9000WXXY	2051	LG	55SM8600PTA	5234	Kogan	KALED75MU8010SZA	5310
Samsung	QA82Q60RAWXXY	5097	LG	75SM8600PTA	5234	Kogan	KALED65KU8100GA	5311
Samsung	QA98Q900RBWXXY	5097	LG	86SM9400PTA	5234	Kogan	KALED75XU9210STA	5369
Samsung	UA88JS9500WXXY	2051	Hisense	24P2	2183	TCL	40D3000F	5257
Panasonic	TH32F400A	3825	Hisense	43P6	4539	TCL	40D2900F	3047
Panasonic	TH32FS500A	3825	Hisense	65R5	4539	TCL	75P8MR	4259
Panasonic	TH40FS500A	3825	Hisense	75R6	3519	TCL	85P8M	4259
Panasonic	TH65FX800A	4688	Hisense	75R8	5029	TCL	85X6US	4259
Panasonic	TH65FZ1000U	4688	Hisense	75P9	5029	Soniq	E24HZ17BAU	3168
Sony	KDL32W660E	4151	JVC	LT32N380A	5108	Soniq	S43V15AAU	3168
Sony	KD43X8000G	4396	JVC	LT40ND56A	5108	Soniq	N50UV18AAU	3168
Sony	KD55X8000G	4396	JVC	LT40N570A	5108	Soniq	N55UX17BAU	3168
Sony	KD75X7800F	4396	JVC	LT58N790A	4713	Soniq	S65VX15AAU	3168
Sony	KD65A9F	4396	JVC	LT55N775A	4360	FFalcon	50UF1	4259
LG	32LK610BPTB	4397	Kogan	KALED24EH6000DVA	4291	FFalcon	40F1	3047

9.1.3. Setup Method 3: Code Search



9.1.4. Setup Method 4: Learning from Other Remotes

For TV's that are not supported by Popular Brands, Direct Code Entry or Code Search methods of programming the BiQ's Slate remote can learn from the TV's remote (teaching remote). By default, there's nothing programmed under the Sale remotes hidden SETUP button. The remote control sends out the IR code sequences for Samsung TV POWER & SBB POWER when the remote's TV POWER key is pressed. Learning function causes assigning of a code to the SETUP key and new code sequence to the TV POWER key.

Note: The learning method can also be used if the remote is to power on/off the TV but control the volume via another device (e.g. sound bar). In which case the SETUP key would be learnt from the TV remote's POWER key and volume keys from the other device's remote.

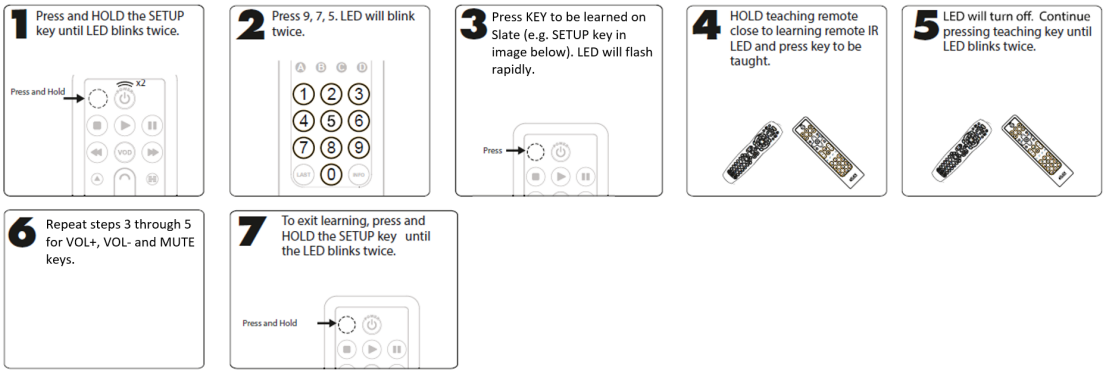
9.1.4.1. 1st Generation Slate remote

There are two stages to programming the 1st Generation Slate remote from a teaching remote.

1st Stage

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The first stage is to program the Slate remote's SETUP (hidden key, to left of Power key), VOL+, VOL- and MUTE keys from the learning remote's POWER, VOL+, VOL- and MUTE keys respectively:

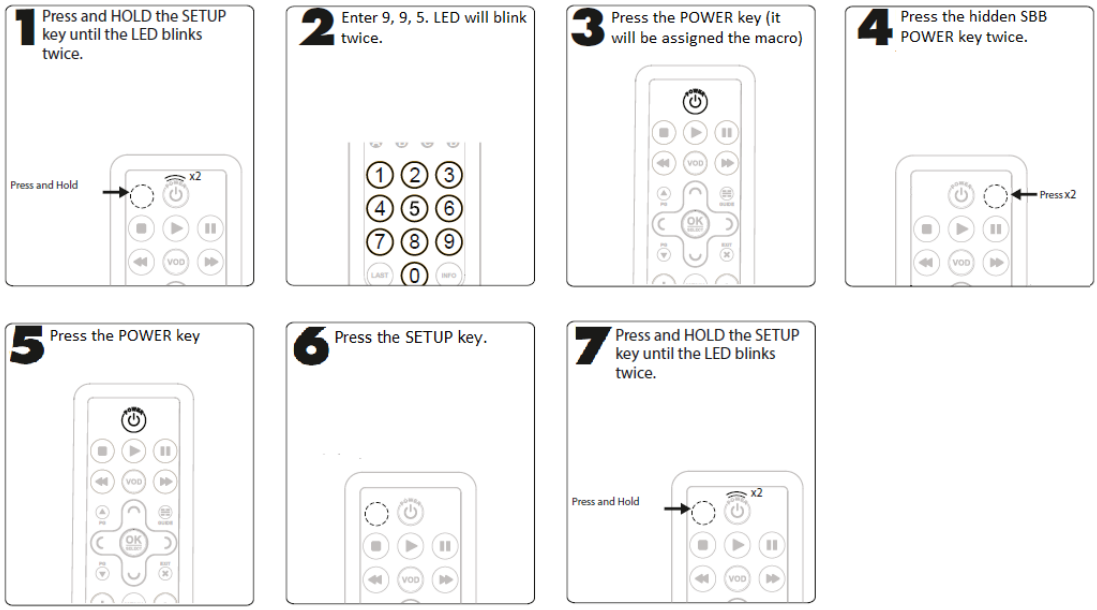


Important: The Slate remote's SETUP key (<u>not</u> POWER key) is programmed with the TV's POWER key above.

Verify the Slate's SETUP key powers the TV on/off plus the VOL+, VOL- and MUTE keys control the TV's volume. If not, repeat above steps.

2nd Stage

The second stage is to program a macro for the Slate remote's POWER key to control the SBB.



Verify the Slate's POWER key powers the TV on/off. Exit to live TV and confirm the POWER key momentarily displays the Welcome screen prior to the TV going into standby. If not, repeat above steps for second stage.

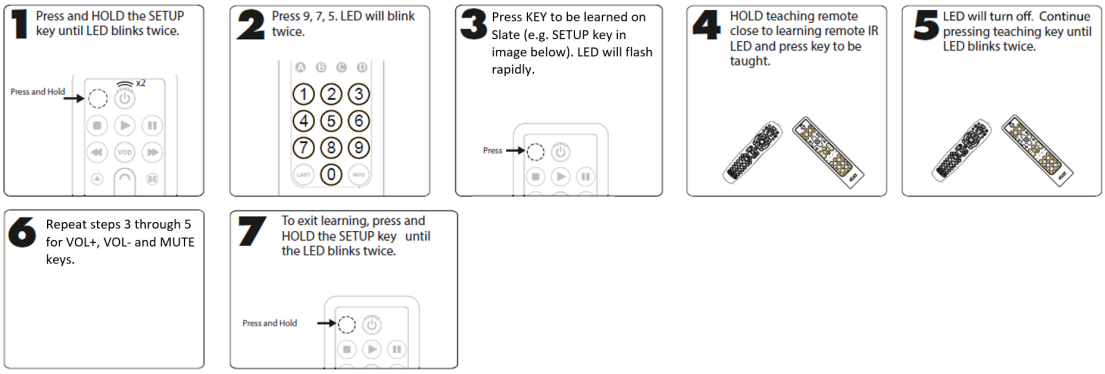
Important: If the Welcome screen is not displayed the remote control is incorrectly programmed and may not bring SBB out of standby. Some TV models may turn off too quickly to display the Welcome screen. If this is the case the TV remote may be used to turn the TV on again to confirm the SBB is displaying the Welcome screen.

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9.1.4.2. 2nd Generation Remote

Program the Slate remote's SETUP (hidden key, to left of Power key), VOL+, VOL- and MUTE keys from the learning remote's POWER, VOL+, VOL- and MUTE keys respectively following the steps below.

Note: By default, after performing the steps below the factory programmed Samsung TV POWER code is still transmitted (i.e. there are two different TV POWER codes transmitted and one SBB code). This should only be an issue if there is also a Samsung TV in the nearby vicinity. If this is an issue, set the default TV POWER code to a TV other than Samsung by first performing Setup Method 2 – Direct Code Entry in section 8.1.2 to program the remote for any TV that is not in the vicinity, and then follow the steps below.



Important: The Slate remote's SETUP key (not POWER key) is programmed with the TV's POWER key above.

Verify the Slate's POWER key powers the TV on/off. Exit to live TV and confirm the POWER key momentarily displays the Welcome screen prior to the TV going into standby. Verify the Slate's VOL+, VOL- and MUTE keys control the TV's volume. If the remote does not behave as expected, repeat above steps.

Important: If the Welcome screen is not displayed the remote control is incorrectly programmed and may not bring the SBB out of standby. Some TV models may turn off too quickly to display the Welcome screen. If this is the case the TV remote may be used to turn the TV on again to confirm the SBB is displaying the Welcome screen.

9.1.5. Resetting to Factory Default

(1) Press and hold SETUP key until the LED above the POWER key blinks twice
(2) Press 9-7-7, the LED shall blink four times.

The remote should now control a Samsung TV and the SBB.

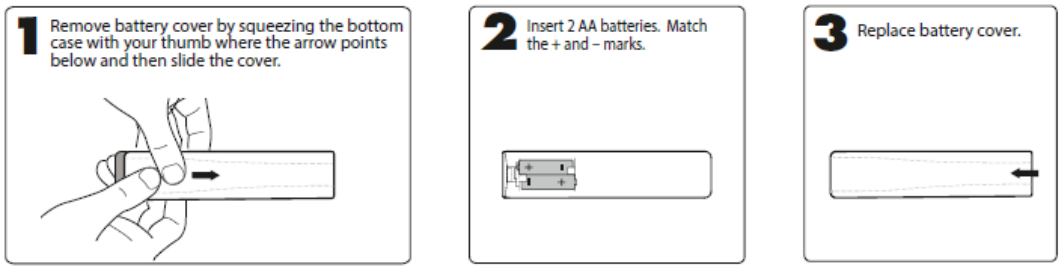
9.1.6. Remote Control Smoke Test

The following test should be performed to check correct operation of the remote control, TV and SBB (as included in full In Room Smoke Test, chapter 9):

Important: If the Welcome screen is not displayed the remote control is incorrectly programmed and may not bring SBB out of standby.

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9.2. Battery Replacement



10. In Room Smoke Test

Important: The following test are mandatory to check correct operation of the TV and SBB prior to notifying a customer the Foxtel service in a room is ready for use:

- ☑ Confirm the SBB remote control Vol+/- and Mute keys control the TV
- ☑ Exit to live TV and confirm the SBB remote control Power key momentarily displays the Welcome screen prior to the TV going into standby.
  Note: If the Welcome screen not displayed remote is incorrectly programmed and will not bring SBB out of standby. Some TV models may turn off too quickly to display the Welcome screen. If this is the case the TV may be brought out of standby in isolation from the SBB (e.g. by using the power button on the TV or pressing the power key on the TV's remote control) to confirm the SBB is displaying the Welcome screen.
- ☑ Confirm the SBB remote control Power key powers on the TV to the HDMI input the SBB is connected to (normally HDMI 1).
- ☑ Confirm the SBB automatically performs a linear TV scan during first installation.
  Note: To initiate a manual scan press the remote-control key sequence Red C, Red C, 8, 8, 8, <EXIT> from the Welcome screen.
- ☑ Initiate playback of an On Demand title (if On Demand is present in the main menu) to test VOD audio/video playback.
- ☑ Tune to an available FTA terrestrial channel (any available for ch#1 – 99) to test AV playback.
- ☑ Tune to Ch 176 - TVSN to test AV playback of Foxtel (unencrypted) H-Pol channel.
- ☑ Tune to Ch 652 - TRT World to test AV playback of Foxtel (unencrypted) V-Pol channel (unless single satellite lateral installation).
- ☑ Cast YouTube from a mobile device (optional if Casting is present in the Welcome screen main menu)
- ☑ Confirm there are no audio/video issues (e.g. clear UI picture/video/audio, no video/audio break-up, no screen resolution/discolouration, etc).

Note: Contact Foxtel's Business support team on 1300 874 403 to send bulk Foxtel channel entitlements to SBBs that are online after smoke testing (e.g. at end of day/installation).

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11. Hidden Features

11.1. Special Key Sequences

Table 1 list the special key sequences to access hidden features, which are available for troubleshooting and/or configuring the SBB. Some features are explained in more detail within sections in the remainder of this chapter

Screen	Remote Control Key Code	Remark
Setup Screens	Please contact Foxtel for confidential key sequence	• Configure Wifi • Factory Reset • Manual satellite and/or terrestrial (FTA) channel scan • Change video resolution • Change CEC control
Maintenance Screen	Please contact Foxtel for confidential key sequence	• Setup Chromecast • View firmware and application/UI version • View box telemetry • Move SBB to another room • View the state of VOD server connectivity
Channel Scan	<RED><RED> 8 8 8 <EXIT>	• Manual terrestrial (FTA) frequency scan
Diag Screens	Press MENU to display the Welcome screen and then: <EXIT><EXIT> 3 4 2 4 <EXIT>	• Software versions • Serial number • Ethernet & IP Information • WiFi information (if configured) • Tuner signal information

Table 1 Special Key Sequences

11.2. Wi-Fi Configuration

Where Ethernet connectivity is unavailable for BiQ deployments the Wi-Fi interface on the SBB must be configured either by using a USB memory stick (recommended) following the steps below or using the SBB's hidden Setup screens (see section 10.3).

(1) Confirm what SSID (network name) and password is to be used by Foxtel at the property, plus the security used; WPA2-PSK (typical), WPA-PSK, WEP, or None. *Note: Some property may use different SSIDs in different areas.*
(2) Use a raw text editor (such as Microsoft Notepad) to create a file named config.ini.
(3) Add the following lines to the file, substituting the property's values for SSID, password and encryption:

```
[net]
interface=wlan0
```


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```
ssid=replace_with_property_SSID
password=replace_with_property_password
encryption=WPA2-PSK
```

Important: Each line must end in a carriage return. A common problem is the last line not ending in a carriage return, which means the SBB is unable to determine the type of encryption to connect to the Wifi network.

(4) Save the config.ini file to an empty USB memory stick.
(5) Inserted the USB stick into a SBB and power cycle the SBB.
(6) The SBB should automatically boot to the Main Menu of the hidden Setup screens (see section 10.3). Correct configuration may be confirmed by checking the property's SSID & encryption type is selected (as in the config.ini file) and "Connected" displayed in the Wi-Fi Set-up screen (see 10.3.2) and/or Wi-Fi is set and an IP Address assigned in the Home Network screen (see 10.3.1).
Note: If the SBB does not boot to the Setup screens it has been unable to successfully ready a config.ini file on the USB stick. Check the file name is config.ini, it is the only file on USB stick and not in any folder (i.e. at root directory). The USB stick should have a single EXT4 or FAT32 file system partition (can be checked by displaying the Properties of the USB drive in Microsoft Windows).
(7) Remove the USB stick from the SBB.
(8) Use the Exit key on the remote control to exit the hidden Setup screens. The SBB will then proceed to boot as described in section 7.1.

11.3. Setup Screens

Refer to Table 1 for remote control key sequence to enter the main menu for the hidden set-up screens in Figure 20. Use the Up/Down arrow remote control keys to select an option and press OK to enter the option. Use the Left/Right arrow keys and OK to make settings changes within an option. Press Exit to go back.

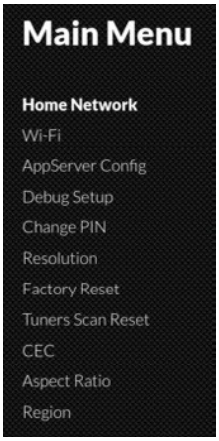


Figure 21 Set-up Screen Main Menu

11.3.1. Home Network

Where Ethernet is unavailable for BiQ deployments the Wi-Fi interface on the SBB must be enabled in the Home Network screen by changing the Home Network option in Figure 22 from Ethernet (default) to Wifi (see also section 10.3.2 to configure Wi-Fi

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settings). The reverse can also be performed to switch from Wi-Fi back to Ethernet connectivity.

Note: There should be to need to change options other than the Home Network on this screen unless instructed by Foxtel Business.

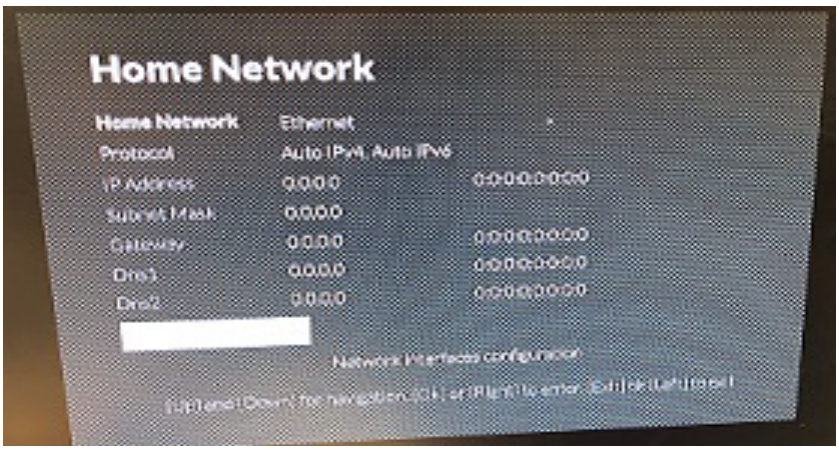


Figure 22 Home Network Screen

11.3.2. Wi-Fi Setup

After switching internet connectivity to Wi-Fi as per section 10.3.1, the Wi-Fi interface is configured via the Wi-Fi setup screen (see Figure 23) using the instructions below, dependent on if the network (SSID) in visible (typically the case during first time institution at a property) or hidden.

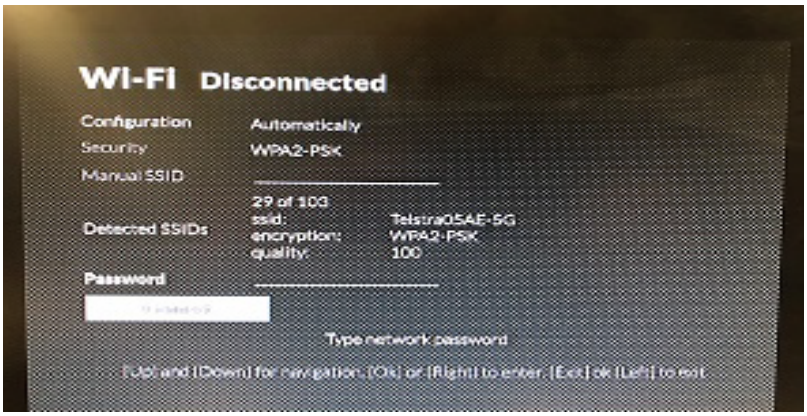


Figure 23 Wifi Set-up Screen

Visible Network

(1) Set Configuration to Automatic in Wi-Fi setup screen (if it is not already) by pressing OK on Configuration, using the left-arrow key to select Automatic and then pressing OK to confirm the selection.
(2) Navigate down to Detected SSIDs. Wait for Wi-Fi networks to be detected, then press OK key.
(3) Use the right/left arrow keys to choose the SSID allocated by the property to Foxtel and press OK to confirm.
Note: The quality should be a minimum of 50 for correct operation of the SBB. If it is not, please inform Foxtel Business.

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(4) Navigate down to Password and press OK to display the virtual keyboard in Figure 24.



Figure 24 Virtual Keyboard

(5) Enter the password for the Wi-Fi network using the Left/Right arrow keys to select characters followed by the OK key to add the character to the password. When finished use the Left arrow key to select the ACCEPT button and press the OK key to confirm the password.
Note: Press up arrow key to toggle between uppercase and lowercase letters.

(6) Press the down arrow key and select the Connect button. Then press the OK key. The SBB shall attempt to connect to the Wi-Fi network and if successful "Connected" shall be displayed at the top of screen. If unsuccessful, Disconnected shall be displayed.
Note: If the SBB does not connect, please repeat the above steps and confirm the information entered is correct.

(7) Press the EXIT key twice to exit the hidden setup screens. The SBB will then proceed to boot as described in section 7.1.

Hidden Network

(1) Confirm what SSID (network name) and password is to be used by Foxtel at the property, plus the security used (None, WEP, WPA2-PSK, WPA-PSK).

(2) Set Configuration to Manual in Wi-Fi setup screen (if it is not already) by pressing OK on Configuration, using the right-arrow key to select Manually and then pressing OK to confirm the selection.

(3) Navigate down to Security and press OK. Use the right/left arrow key to select the desired Wi-Fi security option (None, WEP, WPA2-PSK, WPA-PSK) and press the OK key to confirm.

(4) Navigate down to Manual (SSID) and press OK to display the virtual keyboard in Figure 24.

(5) Enter the network name (SSID) for the Wi-Fi network using the Left/Right arrow keys to select characters followed by the OK key to add the character to the SSID. When finished use the Left arrow key to select the ACCEPT button and press the OK key to confirm the password.
Note: Press up arrow key to toggle between uppercase and lowercase letters.

(6) Navigate down to Password and press OK, which shall again display the virtual keyboard in Figure 24 again.

(7) Enter the password for the Wi-Fi network using the Left/Right arrow keys to select characters followed by the OK key to add the character to the password. When finished use the Left arrow key to select the ACCEPT button and press the OK key to confirm the password.
Note: Press up arrow key to toggle between uppercase and lowercase letters.

(8) Press the down arrow key and select the Connect button. Then press the OK key. The SBB shall attempt to connect to the Wi-Fi network and if successful "Connected" shall be displayed at the top of screen. If unsuccessful, Disconnected shall be displayed.
Note: If the SBB does not connect, please repeat the above steps and confirm the information entered is correct.

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(9) Press exit key twice to exit the hidden setup screens. The SBB will then proceed to boot as described in section 7.1.

11.3.3. Video Resolution

The video resolution screen highlights the video resolution that is currently set. By default EDID is the HDMI data exchange that occurs between the SBB and the TV which, among other things, negotiates a resolution the SBB shall use that is supported by the TV. However, if this fails (e.g. incompatibility with some TVs, monitors or a projector, or non-Foxtel approved HDMI cable is used) it may cause video display issues. Please contact Foxtel Business to remotely configured the video resolution if required.

Note: Please DO NOT USE the video resolution screen to manually set the resolution.

11.4. Maintenance Screen

Refer to Table 1 for remote control key sequence to enter the main menu for the hidden maintenance screen in Figure 25. The maintenance screen is useful to make software configuration changes while on-site. These include:

- Setup of the Chromecast to use the Wi-Fi access point within the SBB.
- View some box telemetry (e.g. MAC, IP address, software version, serial number)
- View the firmware and application/UI software version on the SBB
- Moving a SBB to/from a room/inventory
- View the state of VOD server connectivity

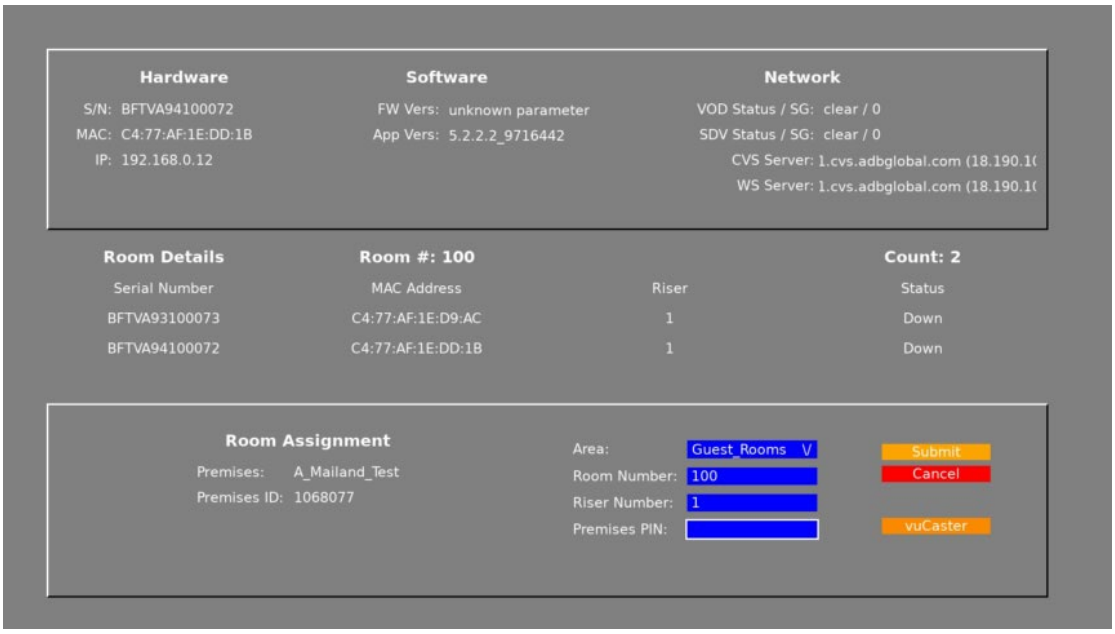


Figure 25 Maintenance Screen

11.4.1. Casting Setup

Follow the steps below to set-up or reconfigure the SBBs integrated Wi-Fi access point and embedded Google Chromecast.

(1) Check the versions under Software in the maintenance screen (see Figure 22):

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a. Is the firmware version is 5.4.1.9 or above? Refer to section 3.3 if a firmware upgrade is required.

   Note: New factory fresh boxes delivered directly from the warehouse shall need their firmware upgraded.

   Note: Firmware version can also be checked from the Welcome screen's main menu (see section 7.3.1) by selecting Settings then About.

b. Is the application version 5.4.1.8 or above? If not, contact Foxtel Business to change it to the latest in the BiQ back-office.

(2) Check the vuCaster button is present onscreen. If not, contact Foxtel Business to enable casting for the property in the BiQ back-office.

(3) Navigate down to the vuCaster button and press OK on the remote control.

(4) If this is not a first-time installation and the room number has changed, select the Default button and press OK to return the SBB configuration to default casting values.

(5) Make sure Enabled is selected. If not, press OK on the Enable field and select Enabled on the resulting pull-down menu.

(6) The Chromecast Name and SSID defaults to area & room number configured in the room assignment screen (see section 7.2.1) and shall normally not need to be changed. However, if there are multiple SBBs assigned to a room, append A, B, C, etc. to the Name and SSID (e.g. Room100A, Room100B).
Note: It is important the Name and SSID reflect the room number in order that a guest will associate the Chromecast with the room number, which appears on the Welcome screen.

(7) For SBBs connected via Ethernet select a Wifi Band & Channel to avoid interference with the property's guest Wi-Fi and SBBs in neighbouring rooms that are close to each other:

a. If all Wi-Fi channels 1-7, 36, 40, 44 are free in a property (e.g. unused by guest network) then alternate channel from 1 (2.4GHz), 5 (2.4GHz), 36 (5GHz), 40 (5GHz) and to 44 (5GHz) between neighbouring SBBs

b. If any Wi-Fi channel from 1-7 is already in use, but channels 36 (5GHz), 40 (5GHz), 44 (5GHz) are free then alternate channel from 36, 40, to 44 between neighbouring SBBs

c. If some Wi-Fi channels from 1-7, 36, 40 and 44 are already in use then the remaining channels should be set for neighbouring SBBs, keeping in mind that if the 2.4GHz range is selected, channels should be separated by at least 4 (i.e. 1, 5 or 2, 6 or 3, 7)

d. If all Wi-Fi channels 1-7, 36, 40, 44 are already in use then alternate the channel according to the appropriate plan in Table 2.

2.4GHz Wi-Fi channels already in use	SBB installation Wi-Fi channel plan
1, 5, 9, 13	1, 5, 36, 40, 44
2, 6, 10	2, 6, 36, 40, 44
3, 7, 11	3, 7, 36, 40, 44
4, 8, 12	4, 36, 40, 44
1, 6, 11	1, 6, 36, 40, 44
2, 7, 12	2, 7, 36, 40, 44
3, 8, 13	3, 36, 40, 44
1, 7, 13	1, 7, 36, 40, 44
Other usage	36, 40, 44

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Table 2 Casting Wifi channel plan

Note: For SBBs connected via Wifi the Wi-Fi Band & Channel is inherited from the property's Wifi network, thus no need to change from default.

(8) Select the Save button and press OK.
(9) Select Configure and press OK to display the screen in Figure 26.
Note: If the Configure button is inactive, check the firmware version is 5.4.1.8 or above (see step 1).

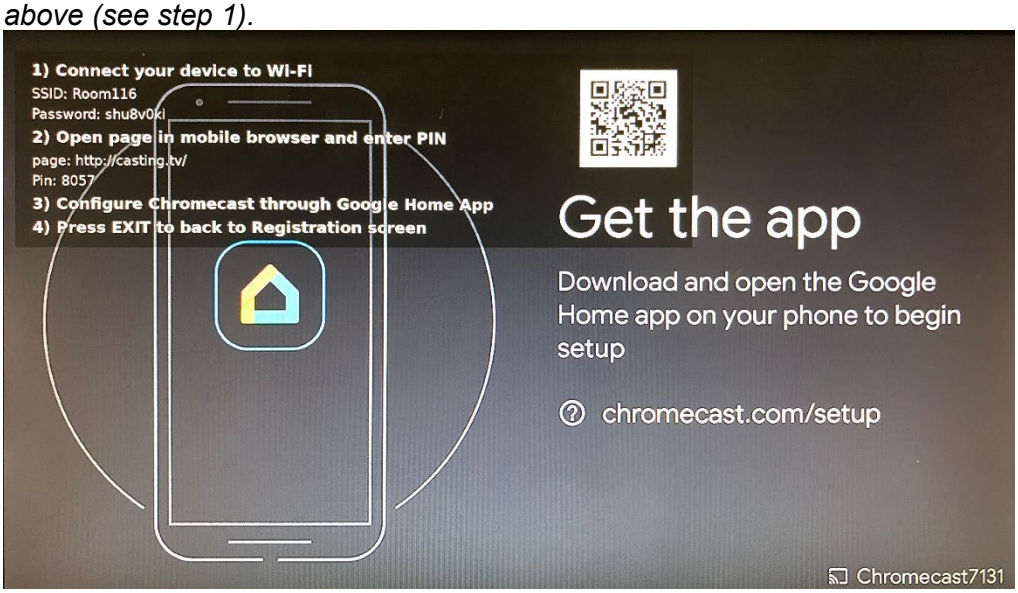


Figure 26 Casting Config Screen

(10) Use the camera or an app of a mobile device (e.g. smart phone or tablet) to scan the QR code on screen in order to connect to the SBB's Wi-Fi AP (Access Point). If unable, connect to the Wi-Fi AP manually using the SSID and Password shown in the screen.
(11) Open a browser window on the mobile. If a PIN prompt does not automatically display as in Figure 27, go to casting.tv and enter the PIN as shown in Figure 26 Casting Config Screen.

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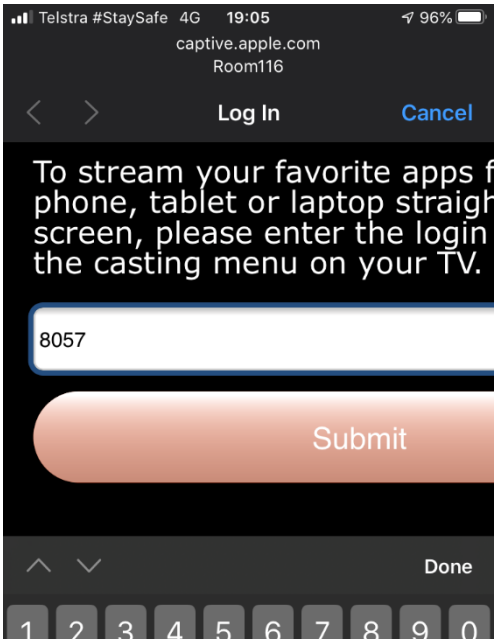


Figure 27 Casting Web Portal

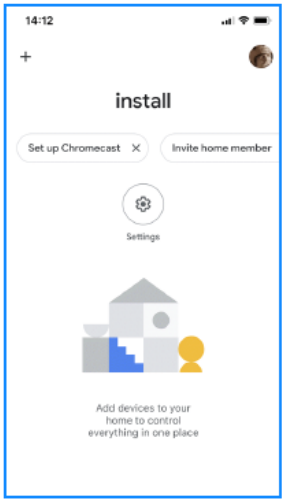
(12) Once the PIN is entered a private connection to the Chromecast is opened. If the Chromecast has previously been configured on the SBB, reset it to factory default by pushing the button down (for ~10 secs) through the pin hole in the Chromecast casing and waiting for the Chromecast to confirm the reset on the TV.

(13) Open the Google Home application on the mobile device and continue with the instructions below.

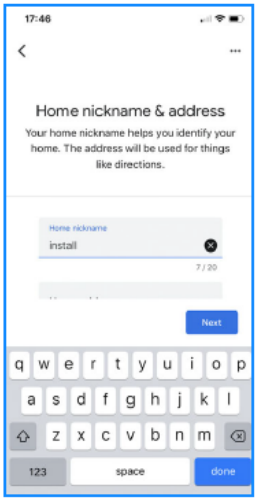
Note: These instructions may vary as the Google Home application is often updated. Also, not all screens are shown here for brevity. If prompted to use Location Services, select Allow.

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1. Select the + icon (upper-left) and select Setup Device. Or, select the Setup Chromecast button.



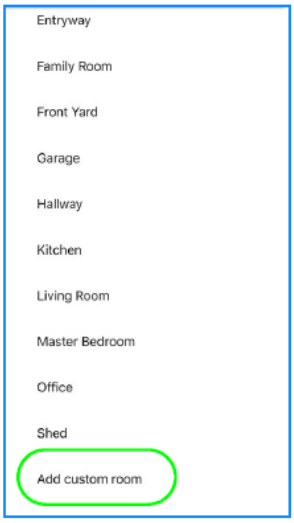
2. The Google app wants you to either use an existing Home or create a new one. It is recommended that you create a "Home" for installations (e.g. Install).



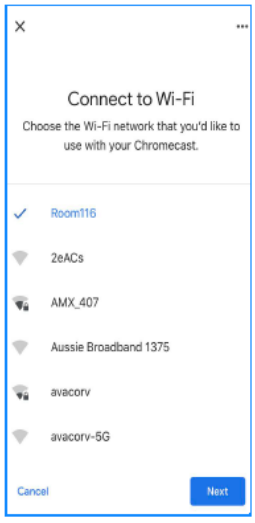
3. The Chromecast will be discovered and you are prompted to confirm the code on the TV matches the code in the Google app.



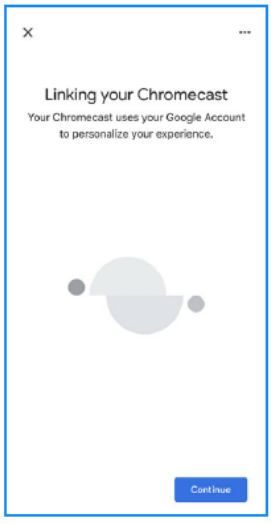
4. Specify where the Chromecast is located by scrolling all the way down and select **Add custom room** and name the room exactly the same as the SSID in the configuration screen (e.g. Room116). This is the name that guests will see when connecting.



5. Confirm the Wi-Fi AP name to which to connect the Chromecast (e.g. Room116). If prompted, enter the password.



6. The Chromecast will be fully setup at this point. There is no need to link it to your account. You may press 'X' in the top left hand corner to exit the set-up.



Important: Never connect the Chromecast directly to the property's Wifi, otherwise guests in neighbouring rooms will be able to cast to each other's TVs. Only ever connect to the Wi-Fi access point from the SBB, as instructed above.

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Note: The Google Home application is only required during installation. Once Chromecast is configured on the SBB at installation, a guest only need follow the on screen steps (see section 7.3.2) and use a casting application (e.g. YouTube, Netflix, etc) to cast content from their mobile device to the TV.

(14) Press Exit twice on the remote to exit to the Welcome screen.

11.4.2. Move SBB to another Room

To move a SBB from one room to another follow same steps as for the Room Assignment Screen in section 7.2.1.

Note: If Casting is required in the room configure casting for new room as per section 10.4.1.

11.5. Diagnostic Screens

Refer to Table 1 for remote control key sequence to enter the main menu for the hidden set-up screens in Figure 20. Use the up/down arrow keys to select an option (see example in Figure 28, Figure 29 and Figure 30).

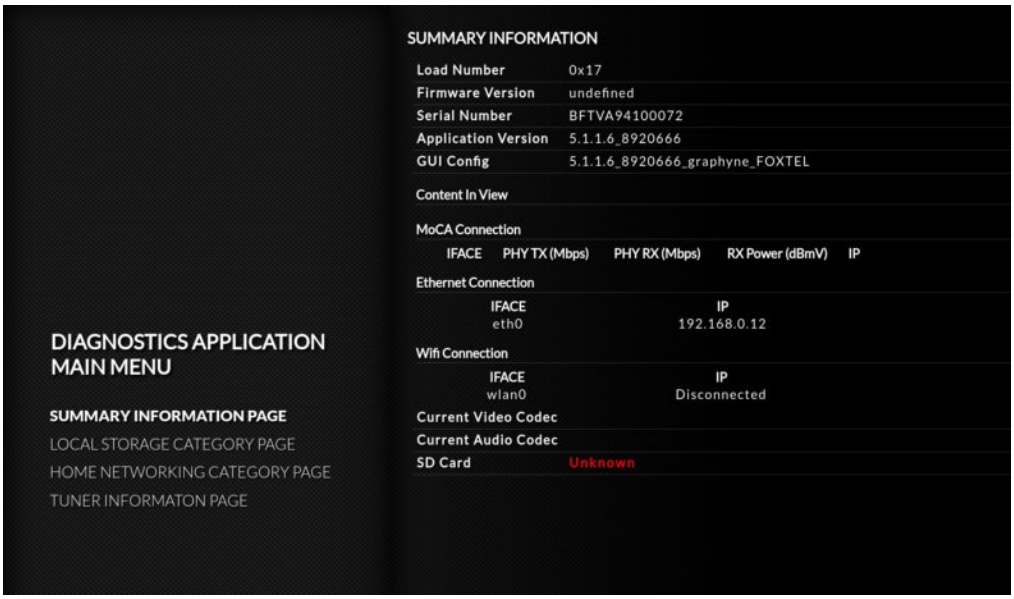


Figure 28 Diagnostic Summary Page

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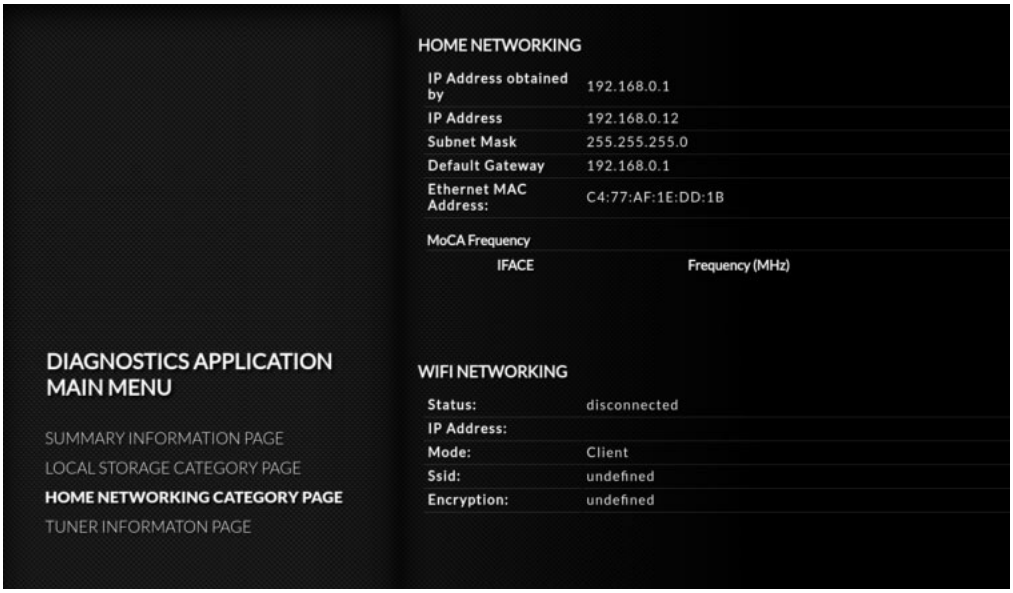


Figure 29 Diagnostic Home Networking Page

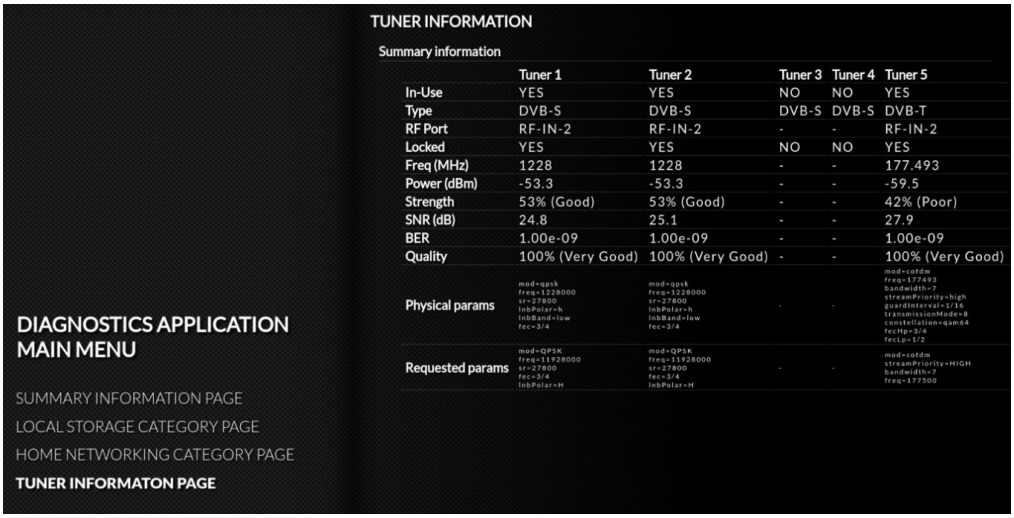


Figure 30 Diagnostic Tuner Information Page

12. vuTyme Management Web Portal

The vuTyme management Web portal for BiQ may be accessed via a computer or tablet's Browser via the following URL:

https://foxtel1.cvs.adbglobal.com/bmc/

If you do not already have access to the portal, please request Foxtel create an account for you.

12.1. Resetting Your Password

1. Open the vuTyme management portal.
2. Is your username known (it is typically the same as the user's email address)?
   - Yes – Continue below

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- No – Select “Forgot Username” at bottom of the vuTyme Manager login page and follow the onscreen prompts. Check your Inbox and Junk Mail for email with further instructions.

3. Is your password known?
   - Yes – Continue below.
   - No – *Select “*Reset Password*”* from at bottom of login page and follow the onscreen prompts. Check Inbox and Junk Mail for email with further instructions.
4. Type the username and password into the vuTyme Manager login page and click “Login”.

12.2. Box Diagnostic Information

The vuTyme management portal provides detailed telemetry on individual boxes that is extremely helpful for troubleshooting. Follow the steps below to view box diagnostics information:

1. Login to vuTyme management portal or click Home if in vuTyme.
2. Drill all the way down to a box using any one of these methods:
   - Using Find
   - Using the Box Management bubble on the Dashboard for a specific Premises
   - Drilling down through the container structure to a box
3. Click the Diag Info tab from the left-hand-side menu.

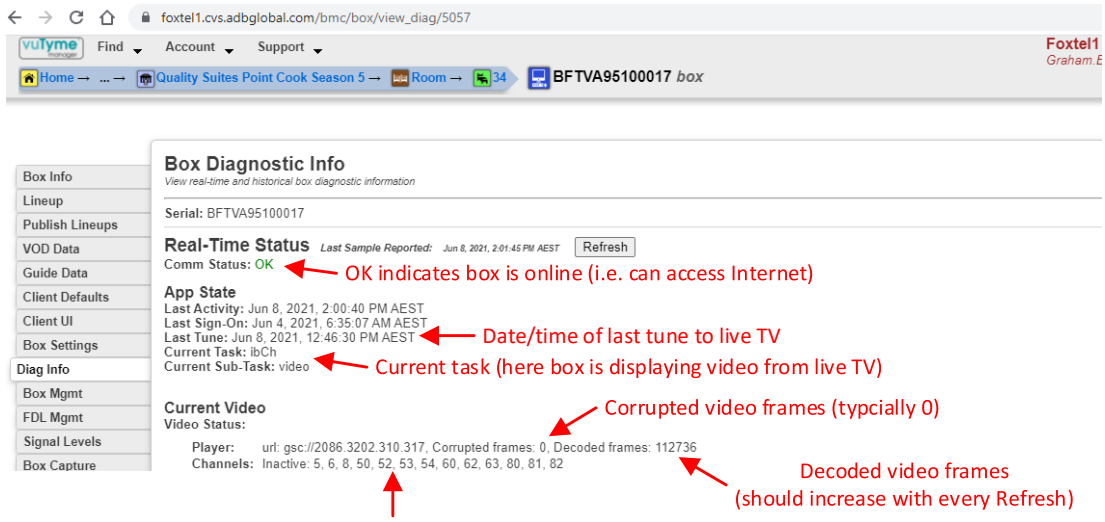
Table 4 summarizes what can be viewed within the Diag Info page.

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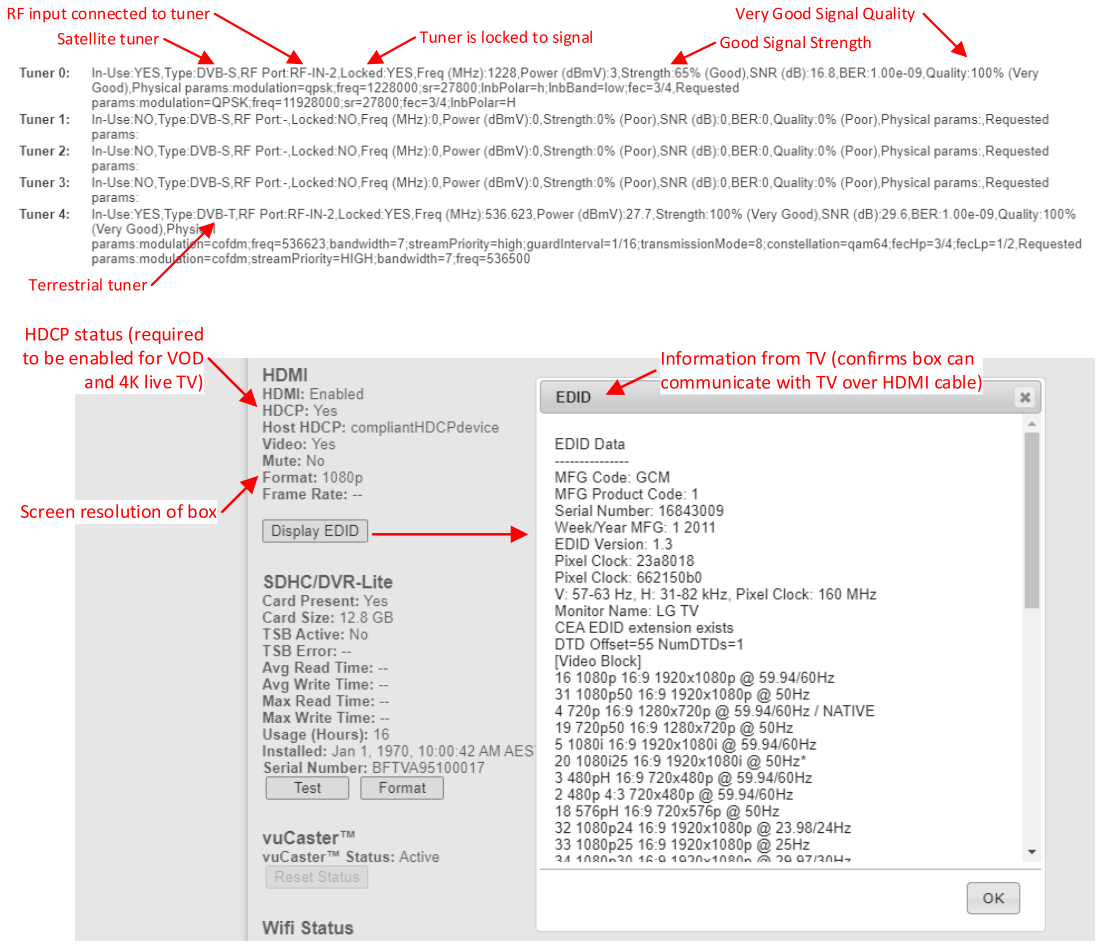
Field	Explanation
Real-Time Status	This section of the screen displays the last known signal levels and communications status (OK, NO COM) from the box. Click the **Refresh** button to retrieve the most current data from the box.
App State	This section displays key events regarding box operation such as its last sign on to the vuTyme server, its last tune, the client's current task, and more. Note that the last heartbeat sent by the box (usually every 10 minutes) is shown in the Historical Status section of the screen.
Current Video	This section provides extensive information on what the box is tuned to and how its tuning. The data will vary depending on what type of media the box is tuned to (satellite/terrestrial RF, an IP stream, a multicast IPTV stream, VOD, etc.).
Scan (not available on all boxes)	Shows the last frequency scans for Terrestrial and Satellite signals and the general results of the scans. The scan statuses are explained below: • DONE-OK - scan success, services were found • DONE-NO_SERVICES - scan success but no services found (may happen when signal cable disconnected) • DONE-CANCELLED - scanning aborted, e.g. scan parameters were changed while scan was in progress • DONE-FAILED - tuner is busy or something else • DONE-DB_CLEARED - tuners were disabled, scan table cleared in middleware • IN-QUEUE - scan is in queue • Time: date and time when scan was done • RetryTime: time when next rescan attempt is planned

Table 3 Fields within Diag Info page

Please see Figure 31 for example of Box Diag Info page.



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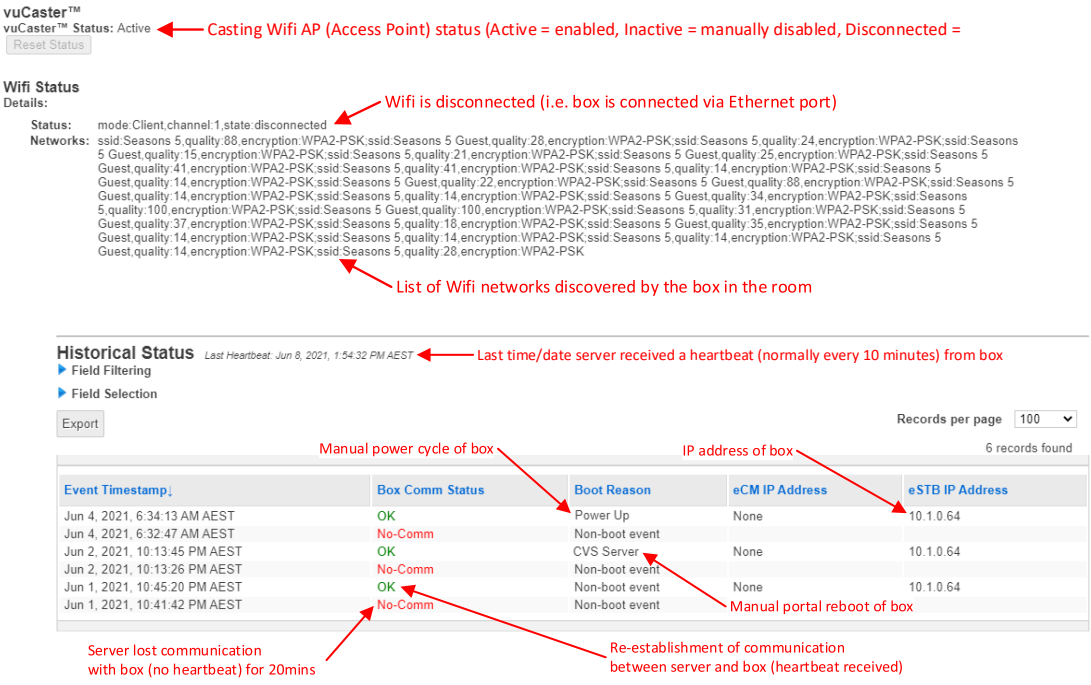


Figure 31 Box Diag Info page example

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13. Internet Connectivity

13.1. Overview

Each Set-Back-Box requires an Internet connection to access Foxtel's back-office system (an AWS Cloud server) for tuning and configuration meta-data information. For optimal performance and reliability, it is recommended the SBB is connected via wired Ethernet to the property's broadband network. A property's network vendor or IT department shall be responsible for upgrading, configuring and securing the on-site IP network at a property as appropriate to receive the Foxtel service prior to SBB installation. The sections below are for background information only and may potentially help to trouble shoot installation issues relating to the IT network.

13.2. Network Configuration

The recommended guidelines for a property's network configuration to accommodate BiQ are outlined below. However, network configurations across proprieties can vary and may need to be discussed with Foxtel on a case-by-case basis.

LAN Configuration

The SBB shall be on a private wired network, separate from the public network for guests, for security reasons as well as to control QoS (Quality of Service), to guarantee the desired bandwidth to each SBB.

WLAN Configuration

There shall be one Wi-Fi SSID (Service Set Identifier) for Set-Back-Boxes and another SSID that is used by guest mobile devices. The SSID dedicated for the SBB traffic should be hidden so as to avoid discovery and tampering with settings. These SSID must be separated on the network which typically involves using VLANs (Virtual LANs) to keep Set-Back-Box and guest mobile device traffic separate. The SSID dedicated for the Set-Back-Box can be 2.4GHz or 5GHz. The SSID dedicated for the guest Wi-Fi connection should be 2.4GHz.

13.3. Network Security

Broadband

All SBB communications are outgoing on port 22, 80, 123, 443, 7780, 8443 and 8453, plus 53, 67 and/or 123 if DNS, DHCP and/or NTP respectively are managed outside of firewall. These ports shall be open to any IP traffic from the SBB. There are no incoming ports that need to be configured in the property's firewall for the SBB.

Local Network

To further protect the private network for the SBBs from being used by the general public, the MAC (Media Access Control) addresses of the SBBs may be registered with the property's router and other devices denied by their MAC addresses from accessing the SBB private network.

13.4. Network Bandwidth

The boot time for the SBB may vary depending upon the available Ethernet or Wi-Fi internet bandwidth speed. A Set-Back-Box requires a minimum bandwidth of 256Kbps to boot, which shall occur in under 10 minutes. If more bandwidth is allocated a SBB

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can boot in less time. If the SBB cannot boot due to low network speeds, an algorithm on the SBB shall randomly attempt another reboot within 30 minutes. What this means is the SBB never stops retrying to boot and that even in very low bandwidth scenarios all SBB shall eventually boot without manual intervention, but it might take quite some time dependent on the available bandwidth.

To support VOD and Casting the SBB dynamically adjusts the streaming video quality using ABR (Adaptive Bitrate) technology according to the available network bandwidth. If bandwidth is insufficient for Full HD delivery, then SD shall be delivered to a SBB. If bandwidth is insufficient for SD delivery, then lower quality video shall be delivered, which is intended for the smaller screens of mobile devices and not recommend for TV screen viewing. 6.3Mbps (1080p widescreen) is required for the SBB to playback Full HD VOD and 2.7Mbps for SD (576p widescreen) quality VOD.

A property shall allocate bandwidth to the Foxtel service as appropriate for their VOD & Casting requirements, but it is recommended not less than 256Kbps per SBB in order that all SBB can boot simultaneously, such as after a power outage. If bandwidth is very limited, no less than 512Kbps for every 10 Set-Back-Boxes is advised.

14. In-house Channels

The BiQ service may accommodate in-house channels, which allows a local welcome channel, promo channels and any other non-Foxtel additional content, such as foreign language channels to be seamlessly integrated into a property's channel line-up. In-house content is ingested as DTT channels and/or IP streams.

In-house channels should be set-up to broadcast within the property, plus added to the property's channel line-up by the Foxtel Business team prior to SBB installation. If there are any issue with in-house channels, please contact the Foxtel Business.

DTT Channels

DVB-T/DVB-T2 COFDM terrestrial channels are supported. DTT channels shall be in the form of an SPTS (Single Programme Transport Stream) or MPTS (Multi Programme Transport Stream) and include a NIT (Network Information Table) with LCN (Logical Channel Number) descriptor plus SDT (Service Delivery Table). Ingestion of DTT channels requires a COFDM modulator onsite. Channels may be modulated within the digital channel centre frequencies of S-Band of the Australian channel plan (AS1367) from S11 to S44 (see Table 2).

AUSTRALIAN TERRESTRIAL TELEVISION 7MHz BAND PLAN FTA Broadcast and Non-Broadcast Bands	
Band channel number (see notes)	Digital channel centre frequency MHz
VHF hyperband channels	
S11	233.5
S12	240.5
S13	247.5
S14	254.5
S15	261.5

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S16	268.5
S17	275.5
S18	282.5
S19	289.5
S20	296.5
UHF hyperband channels	
S21	305.5
S22	312.5
S23	319.5
S24	326.5
S25	333.5
S26	340.5
S27	347.5
S28	354.5
S29	361.5
S30	368.5
S31	375.5
S32	382.5
S33	389.5
S34	396.5
S35	403.5
S36	410.5
S37	417.5
S38	424.5
S39	431.5
S40	438.5
S41	445.5
S42	452.5
S43	459.5
S44	466.5

Table 4 In-house DTT Channel Centre Frequencies

IP Streams

Ingestion of IP content shall be in the form of an SPTS via Unicast UDP (User Datagram Protocol), Multicast IGMP (Internet Group Management Protocol) / UDP or MPEGDASH. IP content is delivered across Ethernet (preferred) or Wi-Fi and decoded by SBB. Ingestion of IP channels requires a video streaming server.

Foxtel offers video hosting to Enterprise customers. Videos supplied by the customer are streamed to a property over the Internet (similar to VOD) and played on a TV when a guest tunes to a hosted in-house channel.

15. PMS (Property Management System)

PMS connectivity offers support for Guest Services, including:

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- On-screen personalised guest name
- Express checkout (if feature supported by PMS)
- Billing folio viewing
- Guest surveys
- Switching the TV in/out of standby upon check-out/in (if TV supports CEC commands through HDMI port)

Connectivity between the property's PMS and BiQ server shall be set-up prior to SBB installation. If there are any issues with PMS connectivity or internet, please contact the Foxtel Business team.

16. Definitions, Acronyms and Abbreviations

Term	Definition
1080p	1920 x 1080 (16:9) resolution Full HD video
4K	3840 × 2160 (16:9) resolution Ultra HD video
576p	1024 x 576 (16:9) resolution SD video
ABR	Adaptive Bitrate
AWS	Amazon Web Services
BiQ	Business iQ
CAT 5 / CAT 5e / CAT 6	Categories of cable for computer networks
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
DTT	Digital Terrestrial Television
HD	High Definition
HDMI	High-Definition Multimedia Interface
IEEE 802.11ac	Institute of Electrical and Electronics Engineers wireless networking standard
IP	Internet Protocol
LAN	Local Area Network
LCN	Logical Channel Number
LED	Light Emitting Diode
MAC	Media Access Control

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MPEG	Moving Picture Experts Group
MPTS	Multi Programme Transport Stream
NIT	Network Information Table
RCU	Remote Control Unit
RF	RF Radio Frequency
RG6 Tri / RG11 Quad	Types of coaxial cable for RF/IF
SBB	Set-Back-Box
SD	Standard Definition
SDT	Service Delivery Table
SPTS	Single Programme Transport Stream
SSID	Service Set Identifier
UDP	User Datagram Protocol
UI	User Interface
Ultra HD	Ultra HD 3840 × 2160 (16:9) resolution 4K video
VESA	Video Electronics Standards Association
VLAN	Virtual Local Area Network

Table 5 Definitions, Acronyms, and Abbreviations

17. Related Document

The documents listed below compliment this document in providing a complete understanding of the Business iQ IPTV technology:

- FXTL-D-0298 BiQ Satellite Infrastructure Guide
- FBIQ-002 BiQ vuStreamer Installation Guide
- FBIQ-005 BiQ Self Help Troubleshooting Guide
- FBIQ-006 BiQ IPTV Integration Guide
- BUS0355 BiQ Technical Overview

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18. Contacts

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