

BreakawayOne

Quick-start Guide

Scroll down to see the rest of this guide.

System Requirements

A **Dedicated PC** running any Windows™ version from Windows XP SP3 to Windows 10.

Virtual Machines are **not supported**. VM's are great for lots of things – alas real-time audio processing is not one of them. Audio processing needs to run as close to the bare metal as possible, which is why we also talk directly to the audio driver using Kernel Streaming.

General use PCs are **not supported**. The machine that processes your station audio is for processing audio alone, not for checking your e-mail or browsing the web. Running playout systems on the same PC is probably fine, though.

Audio Processing requires precise timing, and that cannot be achieved on either general use PCs or virtual machines.

Any CPU on [this list](#) is fine for a couple of stations.

Any CPU on [this list](#) can run multiple stations.

Any CPU on [this list](#) *should* be able to run one FM station and a web stream, but not much more.

Computers are cheap, people are not (and your time counts as the latter).

You can estimate CPU requirements as follows:

Core Type	Passmark (Intel CPU)	Passmark (AMD CPU)
Full FM	800	1200
Basic FM	700	1100
Full AM	600	900
Basic AM	500	800
HD	120	120

Some safety margin is included in the numbers above.

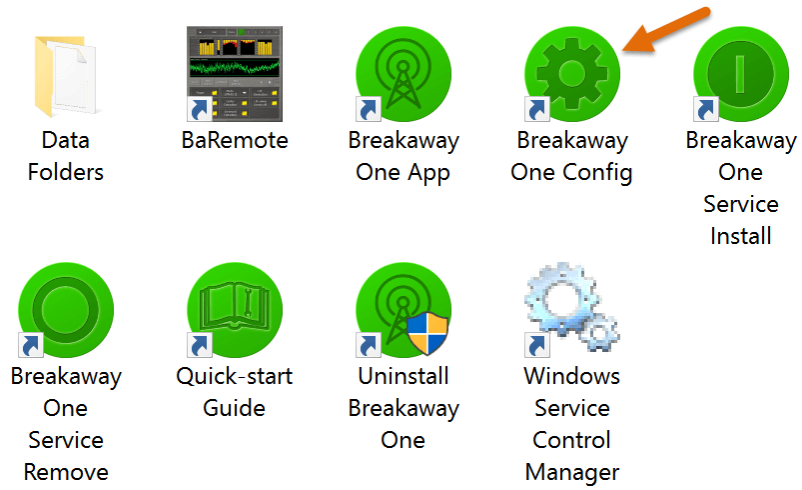
Example, an Intel Celeron G1820 CPU (Passmark Score 2784) should be able to comfortably run 2 FM cores and three HD cores ($800*2+120*3=1960$).

Encoders and playout systems are not included in the formula but they generally use less than an HD core. We recommend keeping the CPU load under 70%.

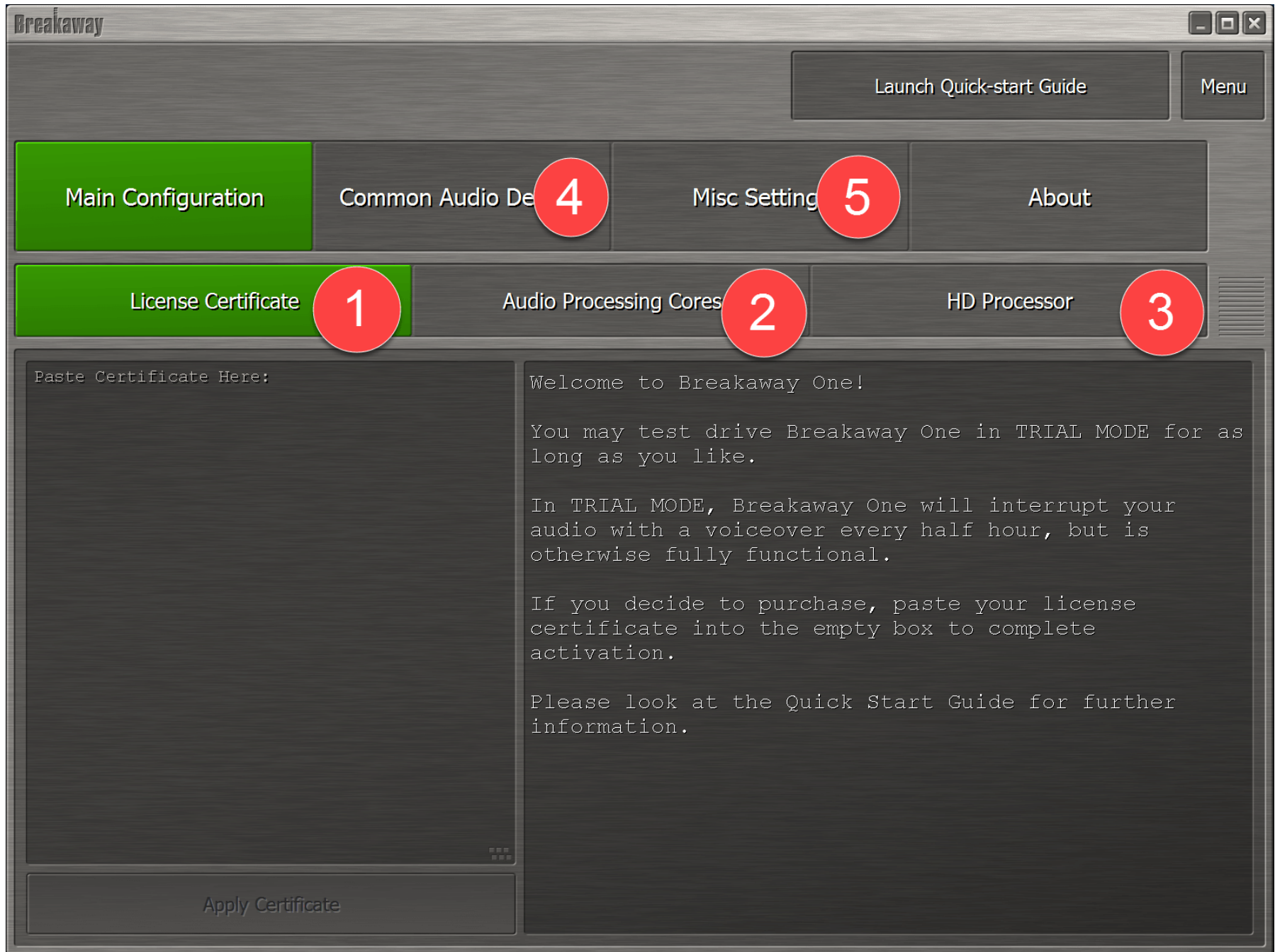
For on-air use, **Windows Update** needs to be **disabled**, unless you don't mind updates taking you off the air in the middle of drive time. Security patches are not necessary because nobody will be browsing the web on this machine. Make sure you keep **Windows Firewall enabled**.

After installation, start by running the Config program from the shortcuts folder.

BreakawayOne in the Start Menu opens the shortcuts folder.



Go through all the pages in order. Most pages will have sub-pages to go through as well.



It's easy to set up multiple processors! The user interface was designed for it from the ground up.

If the sliders behave erratically, select Mouse Control: Teamviewer/Remote Desktop and press Apply.

The screenshot shows the Breakaway software interface with several callout boxes providing instructions:

- Top Callout:** Choose what processing cores you need, and how many. HD is for Streaming, DAB, or just regular listening. Basic FM is for analog FM broadcasting. Full FM can also provide low latency.
- Navigation:** Buttons for "Launch Quick-start Guide", "Menu", and "About" are visible in the top right.
- Section Headers:** "License Certificate", "Audio Processing Cores" (highlighted in green), and "HD Processor".
- Instructional Callout:** "Adjust the sliders to how many audio processors you need".
- Core Configuration:**
 - HD Audio Cores: 1 (Trial) (with a green slider bar)
 - Basic FM Cores: 0
 - Full FM Cores: 1 (Trial) (with a green slider bar)
 - Pass-through Cores: 0
- Management Package:** "Management Package TRIAL" with a yellow button.
- Warning:** "In Trial Mode, BreakawayOne interrupts your audio with a jingle once an hour."
- Action:** An "Apply" button at the bottom right.
- Additional Callouts:** "After you click Apply.." and "...your other audio processors will appear here. Go through each one to set up your inputs and outputs."

Available Core Types

- **Basic FM**

A high quality FM processor. Can be upgraded with RDS encoding, and Livewire+/AES67 support.

- **Full FM**

A high quality FM processor. Can also be used in Low Latency mode for live off-air monitoring.

A separate low latency processor for studio monitoring is included, also when the main processor is in high quality mode.

A flexible speaker controller is included for calibrating your studio speakers.

Can be upgraded with RDS encoding, and Livewire+/AES67 support.

- **Basic AM**

A high quality Mono AM processor. Can be upgraded with Livewire+/AES67 support.

- **Full AM**

A high quality C-QUAM compliant AM Stereo processor. Can also be used in Low Latency mode for live off-air monitoring.

A separate low latency processor for studio monitoring is included, also when the main processor is in high quality mode.

A flexible speaker controller is included for calibrating your studio speakers.

Can be upgraded with Livewire+/AES67 support.

- **HD**

A high quality audio processor for Streaming, DAB, HD Radio, DRM, regular listening, or studio monitoring.

A flexible speaker controller is included for calibrating your speakers.

Can be upgraded with Streaming Encoders, Livewire+/AES67 support, and a separate low latency processor for studio monitoring.

- **Pass-through**

No audio processing, but all other routing features are included.

Can be upgraded with Streaming Encoders and Livewire+/AES67 Support, making it ideal for feeding a remote transmitter site through IP.

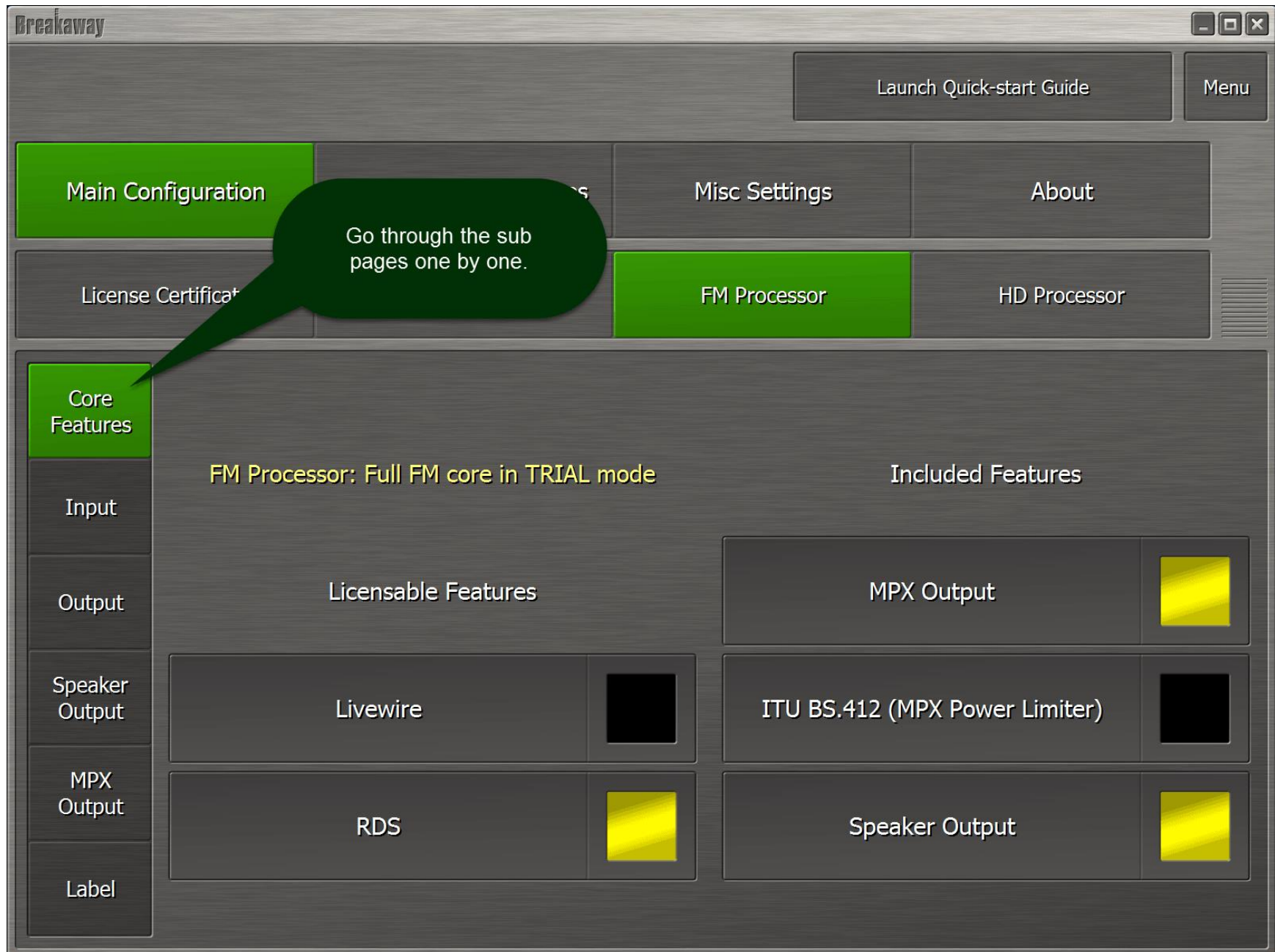
- **Management Package**

Applies to the **entire** processor, **all** cores, on one computer.

Includes:

- Full, direct IP remote control through BaRemote, including Outbound Connection to go through a firewall at the processor site. BaRemote include file recorders and client audio, for streaming any audio patch point to you remotely. Also includes Remote software updating.
- HTTP server, useful for automation - every single BreakawayOne parameter can be controlled through its individual URL.
- Running as a Service. This improves audio stability (realtime priority) and site security, as no user needs to be logged into the machine.
- Stream Receiver - two (primary and secondary) per processing core. An advanced, robust, constant (adjustable) delay Icecast/Shoutcast receiver for use as the input source.
The secondary stream receiver can function as a standby backup for the primary, meaning it will connect to the selected backup feed at the first sign of trouble in the primary feed, but before the primary feed actually runs out of buffer, for a near seamless failover.
Since the backup stream receiver only uses data when needed, it's usable on metered connections such as 3G.
Main input becomes a secondary backup, for a local playout system.
The secondary stream can also function as backup to the main input, however some silence is then unavoidable, as the main input provides no advanced warning of impending trouble, unlike the main stream receiver.
- Diversity Delay, up to 10 seconds. For keeping synchronization across different broadcast mediums.
- Watchdog. Can execute commands after selectable periods of silence, to for example restart an unreliable playout system, or the entire computer.
- IP address management

Select the features you want for each processor, and the input and output devices.



Licensable Features (Paid Options)

- **RDS**

Applicable to FM cores.

Integrated Basic Dynamic RDS encoder. Can automatically update RadioText from a file, URL or the input stream metadata.

Up to four Alternative Frequency entries.

- **Streaming**

Applicable to HD cores.

Can stream to Icecast, Shoutcast and Shoutcast 2 servers, and encodes up to four streams from one processor.

The following codecs are included:

- MP3 (MPEG-1 Layer 3)
- Ogg Vorbis
- Opus
- FLAC
- MPEG-1 Layer 2 (twolame)

AAC and HE-AAC codecs can be used, but are not included.

Any stdin/stdout command line encoder can be used.

- **Livewire**

Applicable to all core types.

Fully Livewire+®/AES67 multicast compliant Audio over IP.

- Input
- Output
- Monitor (speaker) Output for HD, Full FM and Full AM cores.

- MPX output (192 kHz)
- Low latency studio processing (below 10ms delay) when used with Full FM cores, Full AM cores, or HD cores with the Separate Low Latency processing option.

- **Separate Low Latency Processor**

Applicable to HD cores.

Separate Low Latency processing with the same settings as the main processor, so that you can use the highest-quality processing for your stream or digital on-air feed while also providing a low-latency headphone feed for the studio.

Included Features

- **MPX Output**

Applies to FM.

Stereo Generator. Allows bypassing the stereo generator in your transmitter, leaving the job to BreakawayOne, for a dramatically clearer and louder signal, while staying within legal modulation limits. A full dB louder than L/R out, more if you also use internal RDS encoder.

- **ITU BS.412 MPX Power Limiter**

Applies to FM in certain countries in Europe, including but not limited to Germany, Austria, Switzerland, Sweden, Czech Republic, Poland and Slovenia.

A separate carefully tuned preset library gives you the best possible sound while complying flawlessly with the ITU BS.412 regulations.

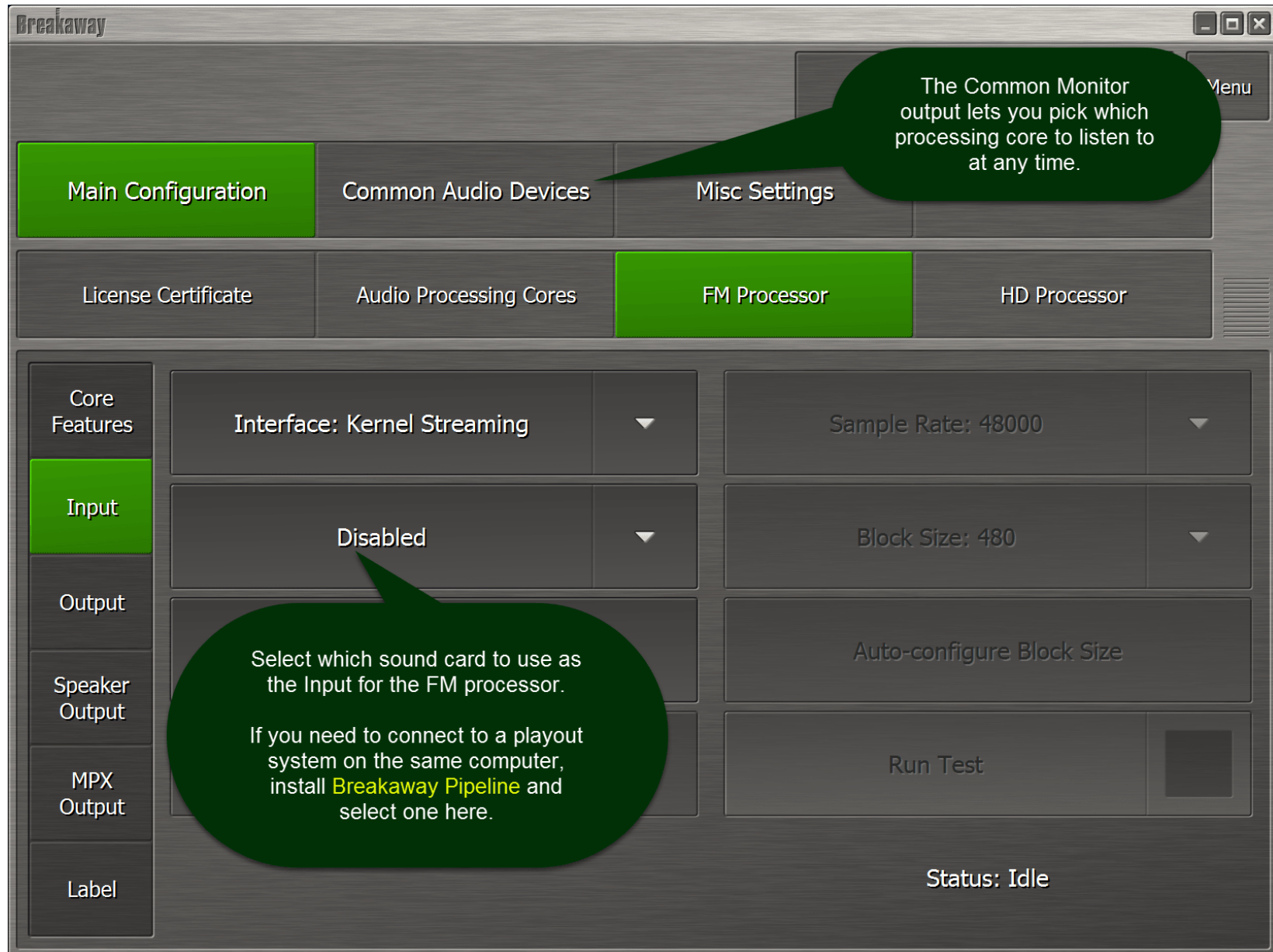
- **Speaker Output**

Applies to HD, Full FM and Full AM processors.

A speaker controller with EQ calibration, pink noise generation, volume-based loudness, and protection limiters. Allows calibration of the studio speakers. This is actually a crucial feature, as it becomes a lot easier to convince your DJ's not to bring low bit rate MP3s into the studio when they're suddenly able to **hear** all the artifacts on the now audiophile-quality speakers, which in turn translates to better air sound.

After selecting an audio device, press Auto Configure, then Run Test.
While testing an output device, you can also enable a Test Tone to make sure it's working.
Input devices and multichannel output devices can be easily shared between multiple processors at runtime.

Do not select the same device in more than one I/O slot.



Almost done...

The image shows a screenshot of the BreakawayOne application's 'Misc Settings' window. The window has a dark grey, brushed-metal background. At the top, there are buttons for 'Quick-start Guide' and 'Menu'. Below these are buttons for 'Misc Settings' (which is highlighted in green) and 'About'. A large green callout bubble on the left contains the following text: 'When you're finished configuring, just close the window.', 'Finally, run the BreakawayOne app.', and 'Congratulations! You have just turned your computer into a state of the art audio processor.' The main content area of the window features a large green bar at the top with the text 'Misc Settings'. Below this is a section titled 'Mouse Control: TeamViewer/Remote Desktop' with a dropdown arrow. A second green callout bubble points to this section and contains the text: '*If* you'll be controlling BreakawayOne remotely through TeamViewer, Remote Desktop, GoToMyPC, VNC etc, **make sure** to select that here.' and 'This setting does not affect BaRemote.' The window also has a volume control icon on the right side.

When you're finished configuring, just close the window.

Finally, run the BreakawayOne app.

Congratulations! You have just turned your computer into a state of the art audio processor.

Misc Settings

About

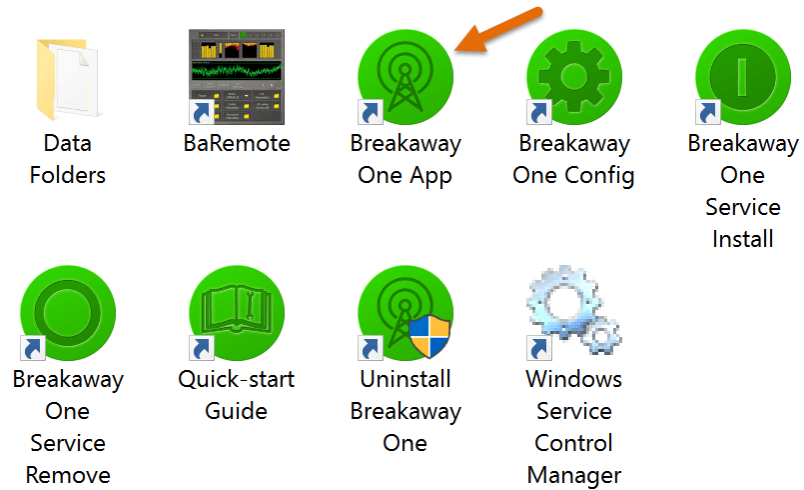
Misc Settings

Mouse Control: TeamViewer/Remote Desktop

If you'll be controlling BreakawayOne remotely through TeamViewer, Remote Desktop, GoToMyPC, VNC etc, **make sure** to select that here.

This setting does not affect BaRemote.

After closing the config window, run the App to start processing.



When you've verified that it works, we recommend installing the **service** for improved stability.

That's it!

Enjoy BreakawayOne.

Please visit <http://www.breakaway.one> for information and forum support.