MAAT

DROffline MkII

User Manual

MAAT Inc.

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Installation & Setup

When preparing for installation of your MAAT DROffline MkII, we recommend that you quit all applications prior to proceeding. Also, after downloading the installer and prior to installation, let any anti–malware measures you may have running scan the installer. Then, temporarily disable all anti–malware measures once scanning is complete.

To install, simply double click on the downloaded Installer for your particular operating system. The installation process will guide you through the install procedure. If you have an older OS version, restarting your host may be required. Don't forget to reënable anti–malware measures or simply restart your host.

Licensing

MAAT software is licensed through our dongle–free, cloud–based license control framework. If your hosts are net–connected, our licenses "float," making it easy to move from one machine to another. All you have to do is close all MAAT stuff on one machine before you open anything on another. If you're going to use the laptop in an environment where internet is spotty or non–existent, you can also go offline temporarily for up to 30 days.

To license your MAAT purchase, open yours or instantiate an example in your preferred plug–in host. When licensing, we recommend you open a new session in your DAW just for this purpose.
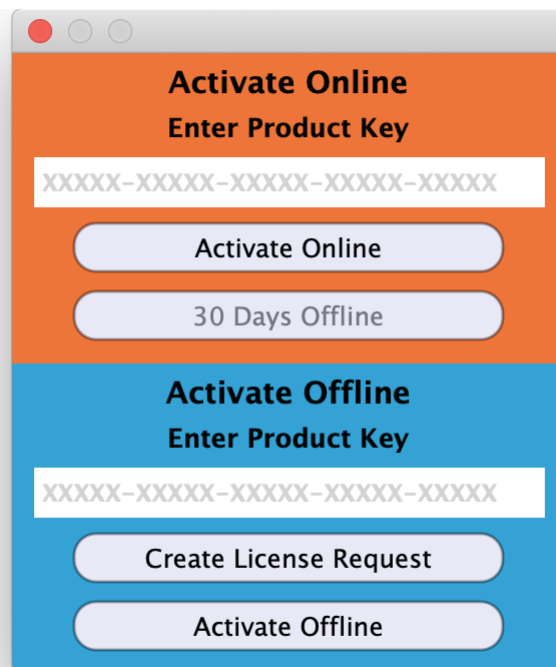

Figure 1: The initial Activation dialog

Online Activation

Once the Activation dialog appears, paste or type in your Product Key supplied at the time of purchase. Then click on Activate/Deactivate Online and follow the prompts.

> 👁 **NOTE:** **The Online process requires a live internet connection. You must have an active internet connection for activation.**

A feature of our cloud–connected system is that, if you close a DAW session that contains MAAT plug instances, then open that session on another host, the license will "follow" you onto the new host as long as you have live internet.

You can also return or park your license on our licensing server, and pick it up later on another host. Once your product is licensed, click the Activate/Deactivate Online button to deactivate your license, then repeat to reactivate.

Offline Activation

If, for security reasons you have an offline host computer or you plan on working without a reliable internet connection, it is best to go with an offline license. There are two offline options, temporary offline and full offline.

Temporary Offline

If you plan on working without a reliable internet connection, we designed the temporary offline option just for you. The temporary offline process also requires a live internet connection, but only during activation.

A temp offline license has two unique features:

- It can remain offline, without an internet connection, for up to 30 days

- It auto–renews its lease whenever it does make a server connection

So, if your internet is spotty or unreliable, or you're heading temporarily to a location where an internet connection isn't available, the temporary offline option let's you work untethered to the 'net for up to a month.

By clicking the "30 Days Offline" button, your online license will become temporarily offline for a maximum of 30 days. If, however, you use the product while connected to the internet at all during that time, the "lease" duration is automatically reset, extending another 30 days.
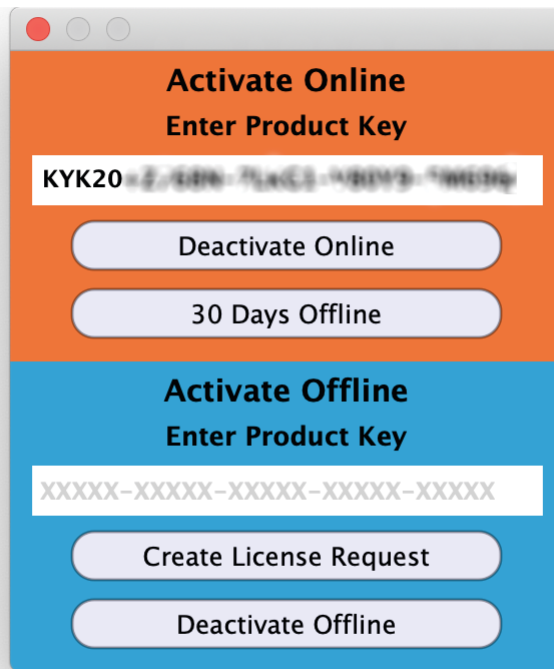
Figure 2: The 30 Days Offline activation option

Full Offline

This will license your MAAT product without the need to periodically contact our licensing server. If you anticipate working without the internet for more than a month at a time or, for security purposes, your studio machine is "air gapped" and has no internet, take a moment to surrender your online license, and replace it with an offline version.

Note: A full offline license does need to be explicitly renewed once a year.

To prepare for offline activation, you will need:

1.   Your Product Key!

2.   Some method to move your License Confirmation file to the offline host machine.

That latter requirement can be accomplished in any number of ways, but a USB flash drive is often readily available and most convenient. You will also need your Product Key that was supplied to you via e–mail when you purchased your MAAT product.

The offline activation process starts with generating a License Request, with a "maatr" file extension, which is submitted on–line to our server or via e–mail to MAAT Support <support@maatinc.

zohodesk.com>. A License Confirmation file, with a "maatc" extension, will be returned to you, which will activate your productt.

To proceed, click on the Activate/Deactivate Offline button, and follow the prompts.

In a year's time, 365 days from the date the maatr file is created, a full offline license must be renewed using the same maatr/maatc method.

Introduction

Thanks for installing your copy of MAAT's DROffline MkII utility, and congratulations on committing yourself to maintaining and preserving dynamic contrast in music!

MAAT is happy to announce that, as an ongoing effort, we will maintain and further develop the plug–in and utility formerly known as the TT DR Meter and TT DR Offline on behalf of the Pleasurize Music Foundation. MAAT carries on the heritage of this popular metering and measurement system, which has transformed the way the music industry views dynamic range.

The MAAT DROffline MkII utility, and companion MAAT DRMeter and DRMeter MkII plug–ins, is a major update in functionality from our first DROffline.

All of DROffline MkII's functionality is wrapped in an information rich yet visually unobtrusive user interface. The utility is also "light weight," demanding a minimum of CPU resources so it won't slow down your host as it works in the background. We've worked hard to make this an exceptionally useful and usable tool for measuring official DR Dynamic Range values, as well as all R128 and A/85 Loudness metrics.
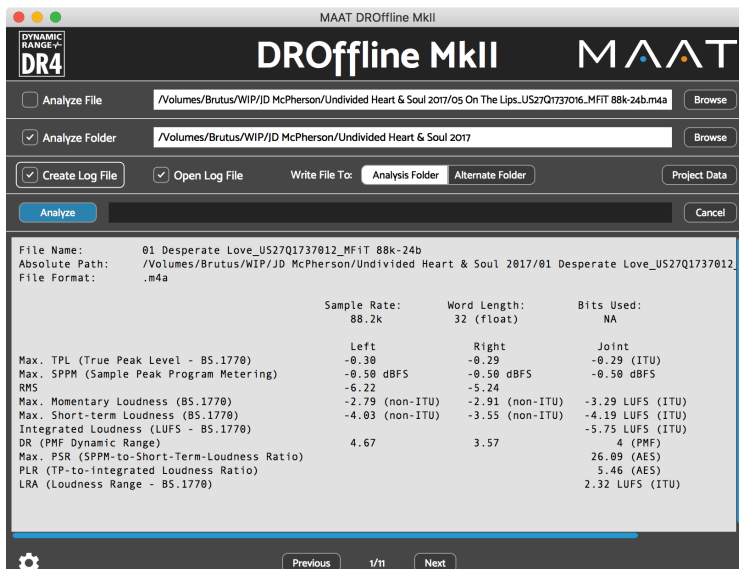
The Interface

Figure 3: DROffline MkII's user interface

The straightforward DROffline MkII user interface contains a series of path preferences at top, for file or folder analysis, along with Log File controls. Below that is a full width progress bar that displays measurement headway.

The lower half of the user interface is occupied by the Listing field, which displays the user defined metrics after a measurement run.

Quick Start — PLEASE READ

We know, reading is old school and such an easy tool to use as DROffline MkII would seem to be self evident, wouldn't you think? However, before you dive in with this tool, we want to make a few things clear so you will get the best use out of your "DRO2" purchase. Thanks for struggling through this part!

DRO2 offers producers, mixing engineer, and mastering engineers a universal tool to create comprehensive log files with a push of a button. With a half dozen clicks, you can transform those logs into something you'll be proud to deliver, along with the master, to your customers.

To make it even easier, we're adding an additional inter–app function that links our DRMeter MkII to DROffline MkII, so you can drag a file right onto the DRMeter MkII UI in your DAW, and a DRO2 Log file opens automatically. This eases your daily engineering workflow, when you're curious or need to get stats on your audio files. In particular, this is great for Pro Tools and Logic users where statistics are unavailable.

Our Goal

Our clearly defined goal is to discover and categorize aggressive amplitude compression and to prevent signal "overs" with reliable peak metering. One of the key differences between DRO2 and other batch measurement utilities is the inclusion of integrated DR. The DR system supplies an easy to understand integer number, from DR4 to DR14, which defines the dynamic quality of a recording at a glance.

We can´t point that out often enough: The aim of the DR tool set is to generate an easy to understand, whole number value, which describes the degree of dynamic reduction vs. the amount of inherent dynamics. It does this by focusing on the top 20% of loudness events, and counting the average of those 20% against peak amplitude. Designed as a motivation to back away from loudness war–driven mastering decisions, the DR measurement system is best suited to all modern and popular mainstream music genres. Due to the natural obstacles of dynamics measurement in general, DR values are more precise for smaller values, where there is little contrast between loud and soft, and may deviate more the larger or higher the DR value. Read further to understand the obstacles of dynamic measurement in general.

In Use

Let´s start with a few important rules to properly measure and interpret your DR measurements:

1. For "official" DR values, always use your DROffline MkII measurement utility. Since official DR values are cumulative, "integrated" over the entire length of a song from start to end, the real time DRMeter plug-in doesn't lend itself to easy measurements, while our DRMeter MkII always will. That said, the real time nature of the DRM2 plug–in means you're wasting valuable time playing through your content instead of handing it off to DRO2 for background measurement.

2. If you also own DRMeter or DRMeter MkII, use them to get a feel for the approximate DR value as you work on a song or album. Remember to go to the loudest spot(s) in your program. See your DRMeter or DRMeter MkII user manual for specific instructions.

3. Here are two scenarios for potentially misleading meter readings and the requirement for sensible interpretation:

a) A pure tone or sustained note has almost zero dynamic range without anything to contrast it to. So, a sine wave measures 0 DR because peak equals loudness. Now, imagine a relatively dynamic jazz song, with a great lead singing a pretty loud, long ff note at a spot with almost no back beat. This will show almost zero Dynamic Range because the plug–in is measuring the contrast between louder events, mostly percussive transients, and lower amplitude events, mostly less percussive harmonic content. If most of the song fits the above description, you'd possibly arrive at a DR of 3 or 4 despite the song not necessarily being hyper–compressed. The nature of dynamic measurement can be cruel, so skillful interpretation of results is essential.

b) Another example: Imagine receiving a mix for mastering with a kick proportionally 4 dB too loud. That is, the kick is "sticking out" of the mix by 4 dB. You ask the mixing engineer to deliver an alternative mix with the kick reduced by 4 dB. That second mix would likely produce a 3 to 4 dB smaller DR than the balanced mix. So, which mix is better? Certainly, the second one with a better balanced kick but a lower DR value!

4. Always judge DR in conjunction with the program you are measuring. A trance track at DR5 can sound incredibly good, as opposed to many DR2 to DR3 competitors, while a rock song would most likely sound squashed and distorted at DR5. Use the following table as a rough guide:

	sample–based music, electronic music with primarily synthetic sounds	Pop, Rock, Mainstream — "radio music" with some acoustic sounds	primarily acoustic music: jazz, folk, bluegrass, classical, music for relaxation
DR4	🔴	🔴	🔴
DR5	🔴	🔴	🔴
DR6	🟡	🔴	🔴
DR7	🟡	🔴	🔴
DR8	🟢	🟡	🔴
DR9	🟢	🟡	🔴
DR10	🟢	🟢	🟡
DR11	🟢	🟢	🟡
DR12	🟢	🟢	🟢
DR13	🟢	🟢	🟢
≥DR14	🟢	🟢	🟢
	Techno	Pop	Jazz
	House	Rock	Folk
	Disco	R & B	Country
	Trance	HipHop	Classic
	Electro	Blues	Chillout
	Goa	Hardrock	New Age

Legend: red = over–compressed, unpleasant; yellow/orange = transitional; green = dynamic & pleasant

Table 1: Genre vs DR

5. Dynamic contrast is an important factor for musical expression. To judge how much dynamic reduction doesn't harm dynamic integrity, focus on dynamic events in the mix when doing loudness–compensated A/B comparisons.

6. The DR algorithm has been designed and crafted to deliver easy to digest measurement of hyper–compressed mainstream music releases. The aim is to bring back, for general music releases, more dynamic contrast and listening pleasure with less fatigue. It was not meant to measure the dynamics of an *a capella* Gregorian choir. It wouldn't make sense, due to the absence of transients, as the DR meter would show misleadingly lower results. Frankly, we haven´t found a satisfying solution to solve that issue yet, though there isn't a huge demand. ☺

Results Count

DROffline MkII helps create more transparency and awareness about the "dynamic quality" of music releases. DROffline MkII is not meant to create a meaningless anti–loudness contest based on the largest DR

values in the universe. This simply makes no sense for the majority of music releases. Also, average listening situations, with some degree of background noise, will rob you of perceptual dynamic range. Nowadays, we have smart technology to control dynamics so the musical impact of dynamics can be preserved while creating results which translate well to radio, streaming and other common distribution methods. This is especially true as loudness normalization becomes ever more accepted, which obviates the impetus for any loudness war. Spotify, iTunes Music, even YouTube and Hulu are now loudness–normalized, though to different target loudness levels, so material mastered with compromised dynamic contrast will actually be amplitude–reduced — made quieter — without your client's knowledge or consent. Neither you nor your client wants that.

Here's a last suggestion for the motivated: Go to maat.digital and have a look on our Support page at the DRMeter MkII user manual. It's a quick read, and most likely you'll gain new knowledge about best practices for metering. Working smarter helps to create outstanding results.

PCM versus MP3 DR

We can´t resist adding this information because thousands of users have asked…We don't allow DR measurement of MP3 files and other lossy formats for a specific reason. It's not because of a technical problem, it's simply that a quirk of lossy encoding cause erroneous measurements.

For MP3 files, you typically see a measured increase in peak values and a small decrease in RMS as a logical result of the PCM–to–lossy encoding. This can be a very subtle peak–to–loudness increase of 0.1 to 0.5 dB, but in some cases it can be an increase of up to 3 dB and thus can cause an MP3 to show a far higher DR value as it´s source PCM, up to 3 DR units. This certainly doesn't mean that lossy files would sound better or be more dynamic. It´s just that MP3 encoding blurs the signal so drastically that we want to encourage the audio community to use DR only for linear PCM or lossless files.

Geek Alert ☻ : High PLR or Peak–to–Loudness Ratio increases can happen if the input level of an MP3 encoder has been reduced to prevent overload and distortion. If no level reduction had been applied prior to encoding, the increased peak values of the decoded MP3 will become True Peak (TP) "over" values higher than 0 dB Full Scale. TP overs are not considered in the DR algorithm, as that makes no sense at all.

BTW, thank you for reading this far! We are not done quite yet, and there's more interesting and important information to come. So, please stay tuned for a tiny bit more…

#1 Rule of Audio Metering

Metering is only as good as the knowledgeable interpretation of the measured values. So, a solid understanding of dynamic measurement is essential.

Despite the relatively new ITU BS.1770–based global standards for various audio metering metrics, the world of dynamic metering is still very adventurous. We have LRA or Loudness Range, and you often hear about PLR as mentioned above. Unfortunately, there are a lot of other, rather opaque and difficult to understand algorithms for measuring dynamics.

Terminology & Dynamic Range Basics

To grasp the general topic of "Dynamic Range" measurements, we need to think about that phrase for a moment. Because of the inherent imprecision of this term, conversations can quickly get a bit weird…You can think of Dynamic Range as the total variation of dynamic expression within a piece of music. If we simply measure the range from the quietest event to the loudest event in a recorded performance, we would almost always end up close to the System Dynamic Range or dynamic range of the encoding method. Compact discs have a roughly 96 dB of system dynamic range. Almost every digital release contains full scale events, hitting the "digital ceiling." In contrast, within an fade out to digital black, we find musical information getting as low in amplitude as our System Dynamic Range permits. For a CD, that would be -96 dBFS.

At this point we already have two variations of the term Dynamic Range:

A. Perceptible or subjective Dynamic Range, the dynamic range of our listening environment which, in turn, depends on the quality of the playback system plus acoustical background noise.

B. Systemic Dynamic Range, which describes the technical dynamic range of a system, such as 144 dB for 24 bit fixed point linear PCM.

Furthermore, a digital audio system's Dynamic Range has two subgroups: the theoretical dynamic range of the system, such as the 144 dB mentioned above for 24 bit LPCM, or the dynamic range of a sub–system, such as a DAC or amplifier. That sub–system dynamic range is usually labeled as SNR or Signal–to–Noise Ratio. We think you'd agree that, though both of the above system dynamic range concepts are useful, they're meaningless for our purposes.

Before digging into more meaningful systems to describe music–oriented dynamic variations, we'd like to point out a major problem which is inherent in measurement and subjective perception. Within the audio technology community, you'll find a lot of research about dynamic range and associated topics, and many studies are unfortunately based on erroneous assumptions. Recent research of the PMF (Pleasurize Music Foundation) led by our own Mr. MAAT, Friedemann Tischmeyer, revealed the inability of a listener to statistically and repeatedly evaluate subjective dynamics and the vitality of the transient structure. Even a

group of skilled professional listeners, who most people would think of as "golden ears," proved this inability of the human ear/brain mechanism to properly evaluate dynamic quality and transient vitality.

"Transient Vitality" is the name we gave to the dynamic density of transient events in audio. Transients without artificially generated consecutive samples have low dynamic density and are considered as vital, in the sense of being essential to fidelity and being dynamically constructive, while transients with a high count of consecutive samples possess artificially high dynamic density and are considered as substantively less subjectively vibrant and vital. We rhetorically ask; "Who wants dull music?"

In conclusion, this simply means that our hearing apparatus had not been trained to distinguish this parameter due to evolutionary requirements. Because the "Loudness War" was the first opportunity to learn and adapt to hyper–compression, our hearing has not been able to evolve. Don´t worry, this doesn´t mean that DR or Transient Vitality is irrelevant for our hearing pleasure. Research also shows that one of the most important mechanisms of our hearing process happens in the brain on a completely subconscious level. Here, DR and Transient Vitality really matters, allowing cognitively "easy" or relaxed integration of music processed by our brains. The PMF, with the help of MAAT, will undertake further and in–depth fundamental neuroscience research to provide more profound insight into our subconscious hearing abilities and functions.

Who Needs DR*i* These Days?

We had to ask ourselves, "Does the world really need the DR2 suite anymore?" The clear answer is, as we to say in California, "Fer sure, dude!" Why? Because LRA or Loudness Range, as specified in BS.1770-4, aims to reflect the dynamics of broadband material being distributed by television broadcasters. The LRA algorithm excludes the top 5% of the dynamic band, which is uninteresting for broadcasters working with generous headroom. However, that same top 5% of the whole dynamic range capacity of a system is essential for music as that content happens almost exclusively in this upper 5% region. DR is the only algorithm for measuring the dynamic integrity of music releases.

Wait! During the last few years, you can find plenty of meters showing PLR or Peak–to–Loudness Ratio, the difference between Peak and Loudness values. Would PLR be a good alternative? Nope, because PLR reflects the Peak–to–Loudness Ratio all the time. If you have a song with an acoustic guitar intro and a very dynamic interlude, but with a chorus smashed against the ceiling like Metallica's Death Magnetic, the PLR would give us a moderately high value due to the dynamic intro and interlude. This is solved with DRMeter MkII as you can actually measure the lack of dynamic range as you hear it.

Do we need the DR value for Loudness normalization of music playlists? Nope, not anymore as an existing integrated Loudness metric, Program Loudness, is the proper algorithm of choice for that function. By integrated, we are using metering shorthand for "integrated over time," where the measurement duration extends over an entire program, from beginning to end. That may be 15 or 30 seconds for an advertisement, or 30 or 60 minutes for a whole show. Sometimes, Program Loudness is referred to as Integrated Loudness or LUi.

Spotify, YouTube, TIDAL, Pandora and many other streaming music platforms are working with Program Loudness, along with TV broadcasters worldwide plus an increasing number of OTT ("Over–The–Top" streaming providers like Netflix and HBO Go) and even traditional radio broadcasters. iTunes Music and iTunes Match uses a proprietary algorithm which is pretty close to Integrated Loudness mentioned above. We really don't need another player in the field of Loudness normalization, which brings us to our original subject; the DR Dynamic Range algorithm!

Evolution of DR

Friedemann Tischmeyer, MAAT co–founder and creator of the Pleasurize Music Foundation, invented the DR system as a way of measuring and comparing dynamic density in pop recordings. This was during the height of the "Loudness Wars" that had started in the late 1970s when AM radio stations were striving to be perceptually louder than their competition. This "louder than everyone else" mentality eventually resulted in the life being crushed out of pop music.

The original TT Dynamic Range Meter was the first implementation of the DR algorithm. DR uses a different algorithm from R128 or A/85. and is designed to provide meaningful measurement and comparison of pop music releases since they have suffered the most, dynamically, from the Loudness Wars. Tischmeyer later became a member of the EBU's *ploud* group that developed the R128 standard. While R128 was originally developed for the automatic control of subjective loudness for commercials, DR provides an easy to understand, integer number that represents the dynamic density or amount of dynamic range compression applied to a song or album.

DR has become a de facto standard in the industry. It is used by engineers, producers and audiophiles to better understand how much the dynamic range of popular music mixes are "crushed" with the use of dynamic range modification tools. The original TT DR also created a database representing the DR values for over 10,000 tracks and albums. The database is used for provenance and comparison purposes across the industry.

Note that the DR algorithm is MAAT's intellectual property, and we have never licensed another company to produce a DR product. Beware of inaccurate impostors!

DR Basics

Pitfalls of DR measurement

What are DR's shortcomings? Basically, the problem is psycho-acoustics. The simple fact is that the absence of transients in some acoustic performances will reflect a very low DR, despite not having compressed dynamic range or hard clipped at all. Let's say we have a singer accompanied by a string ensemble playing legato notes. The singer is belting out loud legato notes and we will see almost zero dynamic as this kind of sound event is dense by nature and the absence of transients can't create a space between peak and average loudness. Some audiophile music producers have complained about the inability of DRMeter to reflect this in a fair manner. Sorry, but DR was never intended to measure the dynamic density of classical *a capella* music! It's one of several genres that don't lend themselves to meaningful metering. In fact, there simply is no completely universal and accurate algorithm available at present. Here's the thing: Metering must be interpreted by a skilled user! With some "seat time" using DRMeter MkII, that skilled user will be you!

Interpreting DR measurements

The aim of the DRMeter is to offer the best possible algorithm to display the dynamic integrity or dynamic density, with emphasis on mainstream pop and rock music. DR measurements are very precise with low values of DR, from DR2 to DR8, and gradually get more imprecise with increasing values due to psychoacoustic effects, physical laws and other factors. So, here's our recommendation for metering interpretation:

- Given two mixes from the same genre, it's highly likely that a DR10 example has more dynamics, lower dynamic density and less compression than a DR8 mix.

- Always judge DR values within a specific genre and the specific material you are measuring.

- With Dance Music and its limited amount of dynamic changes, an increase from DR4 to DR6 can be an insanely huge improvement. You would have a very hard time creating a DR14 EDM master, which wouldn't make sense anyway, while a DR14 jazz master makes perfect sense.

- Depending on the genre and source material, a DR10 master can sound awesome in terms of dynamics, and sometimes it just isn't appropriate to attempt a DR14 version.

Getting Your Geek On

Now, let´s look into the technical principles behind DR and dynamic range measurement algorithms…Technically, you will find two basic principles being used for dynamics measurement:

A. Deviation of loudness distribution within a complete song from beginning to end

B. Difference between average and peak loudness within a complete song from beginning to end

LRA

All popular measurement methods or standards are based on, or derived from, either method A or B. The R128 LRA standard is a derivative of method A. The name is descriptive, because LRA describes a range of loudness. It does this by measuring weighted loudness values, then feeding that information into a histogram which compiles a history of how often particular values appear. The range in dB is then derived, in LU or Loudness Units, between the estimates of the 10th and 95th percentiles of the distribution.

This is an oversimplification. You can read all the gory details by searching for the official ITU LRA technical spec. We simply want to point out the principle of using the difference range of loudness distribution. The practical conclusion is that LRA turns out to be useless for dynamic measurement of pop, MOR and other music genres. This is due to its inherent design, which ignores the top 5% of content, in terms of amplitude, so as to prevent extremely loud passages from skewing the overall result. Unfortunately, that top 5% of amplitude is where 90% of modern music lives! To be fair, LRA was designed to evaluate broadband material, of all types and styles, for broadcast purposes.

PLR

Another dynamic range measurement method is PLR, the oldest known technique based on method B above. PLR simply measures the difference between peak and average loudness. It´s also commonly known as crest factor, and is useful as a diagnostic but not as a gauge of subjective dynamic range or the degree of hyper–compression.

The AES community of audio engineers is currently in the process of sorting out the lack of PLR standardization. This is good though, as the spec is currently in process, it may cause some confusion as not all PLR meters measure the same values. You might find older PLR meters which gauge some relationship between peak and loudness or amplitude, usually an SSPM–to–RMS ratio. Even RMS lacks standardization, as the time windowing and frequency weighting are anyone's guess. So, be aware of outdated PLR meters! In a few years, old PLR meters will hopefully fall away or be upgraded so that no further confusion is created.

Note that, to avoid confusion for some of our users, we have put a cap on the TP values at 0 dBFS so that no values higher than 0 dB will be measured. This means that everything above zero really does equal zero. This avoids erroneous interpretations, as TP values above 0 can simply be considered distortion.

Our PLR meter algorithm is based on the latest AES standardization efforts, and measures a ration of TPL to LUFSi. This makes sense from a broadcaster viewpoint, because broadcasters always stay far below 0

dBFS with their TPL values. PLR is useful for broadcast engineers in an ecosystem where audio always has a minimum TP headroom of 1 dB (R128) or 2 dB (A/85). PLR is not very useful for the interpretation of the dynamic density, or degree of applied compression, as PLR is typically used in a broadcast environment with different distribution paths such broadcast versus OTT or "Over The Top" online streaming.

About "DR Dynamic Range"

By now, you see that "dynamic range" measurement could cause us all some headache. This is the reason why we offer the DR measurement system, because it's the only useful tool set available to reliably describe the "dynamic quality" or density of modern pop and MOR.

DR*i*

Tischmeyer purposefully designed the Dynamic Range metering system to create an easy to understand tool that displays the degree of dynamic reduction within the loudest portions of a program. The official DR value, integrated DR or DR*i*, focuses on "hot" spots of music releases, meaning the loudest portions such as choruses where severe dynamics processing is most relevant. When thoughtfully used, the companion DRMeter and DRMeter MkII can measure louder portions of the music rather than the overall macro–dynamics. DRMeter MkII is the best real time measurement tool available to fulfill this purpose, despite having some compromises stemming from the need for cumulative measurement to derive accurate DR values.

Technically, DROffline MkII splits the loudness values of the measured song into many thousands of different quanta, and feeds that information into a histogram, which provides needed statistics about the loudness distribution. Then, it gates or tosses out 80% of the material, taking the loudest 20% of the histogram or loudness events and measures the difference to the second loudest peak. Thus, DR is a hybrid between methods A and B, and is a bit closer to PLR then to LRA. That said, it is *not LRA or PLR*.

As DR became broadly accepted and has morphed into a de facto standard, we decided to stick to the term DR rather than "Dynamic Range" which is a good way to distinguish DR from other derivatives of dynamic range measurement…Thanks for listening and now, on with the show!

General Use & Limitations

With its advantage of being able to measure an entire song or album, DROffline MkII generates "official" DR values. On the other hand, the complementary DRMeter MkII plug–in is a real time dynamic density estimator designed to be used in conjunction with the DROffline MkII app. For more information on our DRMeter MkII, head to maat.digital.

👁 **Warning**

DROffline MkII is designed to measure songs or albums, not advertisements, spots, bumpers and other very short duration programs. Content

under 10 seconds in length will produce inaccurate results.

Donations

Thank you for your purchase. On your behalf, MAAT will donate $5 for each sale to the Pleasurize Music Foundation to foster the awareness and importance of sound quality, and to support fundamental research in this area. Would you like to help the PMF's research and outreach efforts? Any additional donations are greatly appreciated!

DR Logos

A DR logo kit, with guidelines for use, is included in the documentation subdirectory of your DROffline MkII installation.

In–Depth Usage

Settings

Launch the application, and decide whether you're measuring a file or a directory of files. The upper half of the UI or user interface contains most of the controls for DROffline MkII. Set the Analyze File or Analyze Folder check box appropriately. Then, set the file or folder path using the Browse button. You can also drag and drop a file or folder, and DRO2 will auto–populate the appropriate path field.

The Create Log File check box will force DRO2 to write a log file with all chosen measurements. The Open Log File check box will, yes, open the resulting file and bring it in focus as soon as it has been written.

The Write File To switch let's you choose to have the source directory contain the log file, the "Analysis Folder," or you can steer the log file to another location with the Alternate Folder choice. The Project Data button allows you to save (or save as…) additional metadata, including Project Name and Date, and Artist's Name.

The last row of settings contains an Analyze and Cancel button, with a progress bar in the middle. When analyzing a single file, you'll see a single, MAAT blue bar. In the case of a folder measurement, you'll see a MAAT orange bar indicating passage through each file, while the MAAT blue bar shows overall progress.

DR Badge

When DRO2 first starts up, the DR logo in the upper left corner is generic. Once a measurement has been made, either file or folder, the generic logo is replaced by the specific DR badge indicating the measured value.

Figure 4: The DR badge indicates the measured value

Listing

After progress is complete, the scrollable Listing section displays basic information and metrics for the measurement run. The official DR integer value derived from the measured file or directory is visible at upper left of the UI, in place of the DR logo. Note that this value is a joint measurement derived from both left and right channels, akin to using the LINK mode in DRMeter or DRMeter MkII. If you ran a folder analysis, Previous and Next buttons will appear below the Listing to allow navigation between the measurement results of the folder's contents. Figure 2 above shows an example of that.

Preferences

DROffline MkII user preferences are accessed via the gear icon in the lower left corner of the UI. Clicking on the gear icon results in a Preferences window with four tabs.

Overview

DROffline MkII offers two views into your songs; the UI view, what you see in the app's Listing section, and the textual Log File. Because the amount of date generated by batch or Analyze Folder measurements is substantial, it requires separate preferences to customize the desired display of metrics. For this reason, DRO2 offers two Log setups, for Main Log and Folder Log.

Main Log defines what metrics are measured for the UI Listings via Analyze File & Analyze Folder, while the Folder Log preferences allow you to set up how you want to configure your batch Logs.

Global Tab

The Global preferences tab contains four fields, a Alternate Log Folder path navigator, a Log File Format switch, and a preference for enabling automatic analysis. The optional Studio Name, Engineer Name, Email Address and Phone Number are metadata fields that, when filled, add that information to the log headers.

The Alternate Log Folder path field and the Browse button allow you to set an alternate path to which log files will be saved. The Alternate Log Folder path navigator defines the path used by the Alternate Folder switch in the main UI window. If the Alternate Log Folder path remains blank, DRO2 defaults to the Analysis Folder.

The Log file format can be switched between a plain ASCII text format and TSV format. The plain text option, where commas are used to create structure, can be opened into any text editor or word processor, and the data will look presentable. That said, if you want to organize the data in sized columns then style and print it out easily, choose the Tab Delimited Text (.tsv) option.

Tab Separated Values, or TSV format, uses tab characters to delimit or separate individual data chunks. Although TSV files are also plain ASCII, the presence of tab delimiters mean you can open them, usually

by default, into your favorite spreadsheet application. Once in a spreadsheet, styling the document is very quick and easy.
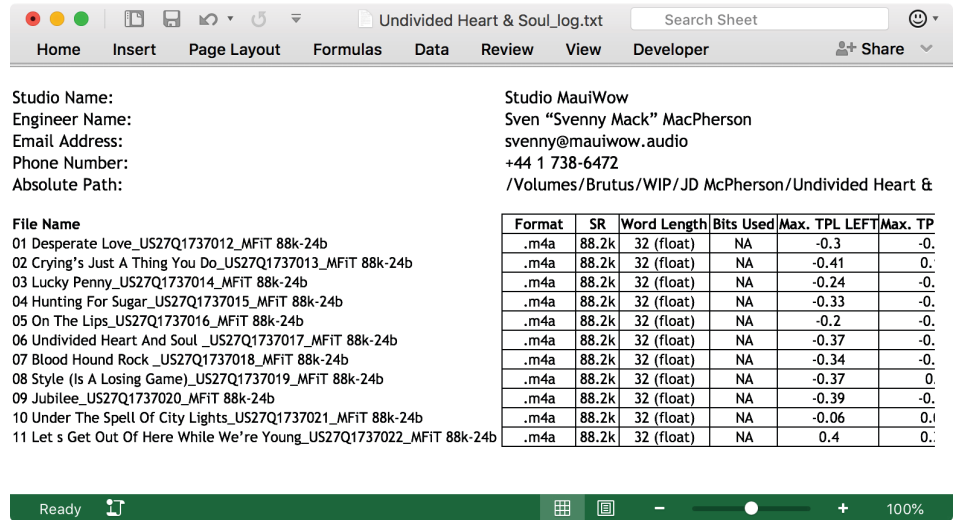

File Name	Format	SR	Word Length	Bits Used	Max. TPL LEFT	Max. TP
01 Desperate Love_US27Q1737012_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.3	-0.
02 Crying's Just A Thing You Do_US27Q1737013_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.41	0.
03 Lucky Penny_US27Q1737014_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.24	-0.
04 Hunting For Sugar_US27Q1737015_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.33	-0.
05 On The Lips_US27Q1737016_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.2	-0.
06 Undivided Heart And Soul _US27Q1737017_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.37	-0.
07 Blood Hound Rock _US27Q1737018_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.34	-0.
08 Style (Is A Losing Game)_US27Q1737019_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.37	0.
09 Jubilee_US27Q1737020_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.39	-0.
10 Under The Spell Of City Lights_US27Q1737021_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	-0.06	0.0
11 Let s Get Out Of Here While We're Young_US27Q1737022_MFiT 88k-24b	.m4a	88.2k	32 (float)	NA	0.4	0.

Figure 5: Part of a styled Log of ALAC files, ready to hand off to your client

Note that Microsoft Office may need a bit of guidance when importing a TSV file to properly display as expected. If extended ASCII characters appear incorrectly when you open TSV files from DRO2, then re–open the file from within the application, and use the Text Import Wizard to properly interpret the file as Unicode UTF-8 and tab delimited only. Optionally, you can set individual columns as Text rather than General.
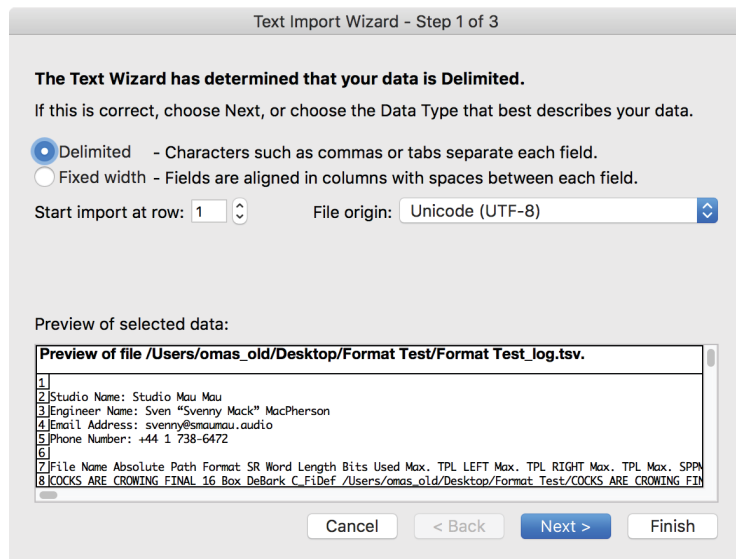

Figure 6: Using Excel's wizard to properly format the document

Next in line is the Search Folders Recursively check box. Along with the adjacent Search level menu, these preferences enable or disable DROffline MkII's ability to search within a directory for content in nested subdirectories.

The last preference in the Global tab is Auto–Analyze on Drag & Drop. Enabling this preference forces DRO2 to automatically start an analysis

run when you drag and drop either a file or folder onto the main UI window.

Main Log Tab

The Main Log preferences tab contains a list of the measured metrics displayed in main UI's Listing section, along with a Preset mechanism to save and recall your settings. Use the check box to the left of each measurement to include or exclude it in the Listing.

Folder Log Tab

The Folder Log preferences tab displays all the metrics that will be included in Log files, allowing you to configure complete measurement lists with songs arrayed in the Log vertically on the y axis, and parameters horizontally on the x axis.

At the top are presets defining which metrics are included and in what order. We've provided factory presets as a departure point. You can Save and Load (open) your own. Below presets are the Add All and Remove All buttons. These self–explanatory buttons enable or add all parameters, or disable all respectively, and are a good staring point for creating your personal presets.

Beneath the Add All and Remove All buttons is a horizontal list displaying currently selected metrics in the order they'll appear in the final Log. You can click–drag on any column header in the horizontal list, and move it to a new or preferred position in the list order. Right–clicking on a column header brings up a list of all metrics, where you can select or deselect an entry in the list. Only checked metrics will appear in Logs.

The remainder of the Folder Log preferences is taken up with all the metrics that can be measured. They are collected into categories, with each one represented as a button. Rather than right–clicking to enable or disable a metric, simply click on any Metric Button to add it to the Horizontal list above the Metric Buttons.
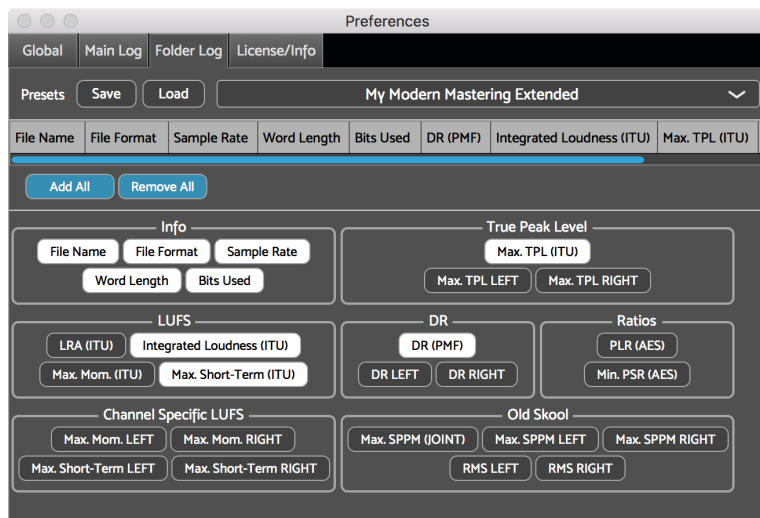

Figure 7: The Folder Log preferences with a user preset loaded

License/Info Tab

The License/Info tab has four buttons, plus credits for the product and the complete version number of the build you are running. The Activate/Deactivate License button brings up a specialized dialog for "parking" your license during host migration or maintenance.

Measured SPPM & RMS

SPPM is measured in dBFS and is available as Maximum SPPM LEFT, Maximum SPPM RIGHT, and Maximum SPPM (JOINT). These show the highest appearing SPPM value rather than the average. RMS is measured as dBFS and is available as RMS LEFT and RMS RIGHT, which represents the average RMS integrated across the measured file. Note that SPPM and RMS are both outdated metrics and are available simply for the sake of completeness.

A note about our Sample Peak Program and RMS measurements… When close to full scale, peak measurement is particularly complex and critical. Fixed point AES/EBU digital audio can only show values up to full scale since, strictly from a numeric representation, no samples over full scale are possible. However, contiguous full scale data words create audible "overs," also known specifically as interleaved sample overs.‡ — see below.

The RMS values measured by DROffline MkII is corrected by +3 dB so that sine waves have the same peak and RMS value, as is the case with most other RMS meters.

BS.1770 Metrics

Integrated Loudness, Maximum Momentary, and Maximum Short–Term are always displayed in LUFS absolute due to the absence of a relative scale referencing Target Loudness. LRA is displayed in LU, which is interchangeable with decibels. TPL is displayed in dBFS, yet can exceed 0 dBFS which is indicated by a leading plus (+) sign.

MAAT's DRMeter MkII supports all common BS.1770–based standards including Maximum Momentary, Maximum Short Term, Integrated Loudness, TPL or True Peak, and LRA or Loudness Range. DRMeter MkII also displays TP values over 0 dB, compliant with the R128/BS.1770 True Peak metering standard.

‡ Interleaved Sample Overs, also known as inter-sample peaks, are digital overs which can be detected only after multiplying the sampling rate, or "over sampling," by a factor of 2 or 4. The values are not detected in Sample Peak resolution (SPPM) because only values up to 0 dB can be represented in fixed point notation as mentioned above. An interleaved sample over can also occur when the peak headroom is 0.1 dB or more and creates distortion only after leaving the digital domain during conversion to analog or/and when encoded into lossy formats.

Channel Specific Loudness

Channel Specific LUFS are available for Maximum Momentary and Maximum Short-Term. They are not part of the BS.1770 standard, but useful for some applications and detection of channel–specific trends. Note that R128 and A/85 are *only* concerned with joint measurements that take both channels into account: One measurement per stereo pair. As noted above, that's also the case for DR*i*. We give you channel-specific measurements so you can, first off, be aware of inter–channel trends or imbalances. Once you know that, you can decide if the situation requires corrective action.

Ratios

DROffline MkII offers PLR and PSR, both according to the latest AES standardization process. Values can be interpreted as either LU (Loudness Units) or decibels, which are interchangeable. Think of Loudness Units as the label, and decibels as the scale, though most folks don't worry much about it. You can read more about PLR in the "PLR" on page 19 above.

PSR is another attempt to measure dynamics. PSR represents the SPPM–to–Short–Term Loudness Ratio. As the recommendation is to stay above 8, we measure Minimum PSR.

Drag & Drop with DRM2

If you own a copy of the companion MAAT product, DRMeter MkII, you can drag a file from your file system onto a DRM2 instance, and that action will launch DROffline MkII and begin a measurement. If DRO2 is already running, one of two scenarios unfold, based on your Operating System…

macOS: The existing instance will begin measuring, and the Log will appear when measurement is finished.

Windows: A new DRO2 instance will open and measurement will begin. The Log will appear when measurement is finished. You may want to quit DRO2 each time you plan on using the drag & drop measurement feature.

Note that sometimes the DRMeter MkII interface may disappear into the background when a file browser window is clicked on. This behavior may change with different DAWs & Operating Systems. To be able to drag and drop an audio file onto the DRMeter MkII user interface when this happens:

1. In your file browser, click and hold an audio file to begin the drag gesture.

2. While holding the mouse button down, press the Alt key in Windows or the ⌘ (Command) key in macOS, and then tap the Tab key until you cycle back to your DAW application.

3. The DRMeter MkII interface should reappear in view. Simply

take the file that is being dragged and drop it onto the plug-in's user interface.

Alternatively, you can drag the DRM2 UI outside of your DAW's visible confines so it stays in sight when you click on another window such as a file browser.

Specifications

System Requirements

- macOS: 10.8 and newer, 32 & 64 bit

- Windows: 7 and newer, 32 & 64 bit

- 4GB RAM minimum

Supported formats

- 44.1 to 384 kHz sample rate

- LPCM: WAV, BWF, AIFF

- Lossless: FLAC, ALAC

Updates

Please always use the latest version of the software! You can find your current version on the Info Tab of the back panel. You can download the latest version simply by visiting:

> http://maat.digital/support/#installers

For optimal security and stability, you should always stay up to date with Operating System revisions, and we keep up with compatibility changes to our products. We also continue to optimize for reduced CPU load, and this very user manual gets its own improvements.

To stay up to date with the latest version and product releases, please subscribe to our occasional newsletter. You'll find a opt–in form on our Contact page, or sign up for a copy of our free and very handy 2BusControl plug–in which will also subscribe you. Don't worry, we know you are busy so we only send out an average of 10 or 12 mailings a year.

Support

For product support, please visit:

> https://www.maat.digital/supports

License Central

License Central, located in MAAT's Shared directory, is a free utility that validates, repairs and logs your MAAT licenses. It also displays what MAAT products you have installed and assists in downloading both updates and demos.

License Central lists all of our products, and shows you:

- If a product is installed and what licenses you have [CLOUD, SUBSCRIPTION, TRIAL, OFFLINE and TEMP OFFLINE]

- What versions are installed, and version installers are available for download

It also provides:

- A one–click download of an update or a demo

- A button to activate or deactivate any of your licenses

- A copyable list of all your Product Keys

- One–click generation of the MAAT diagnostic report

It also fixes license issues automagically.

In Use

When you launch License Central, it scans your host computer and then attempts to match up each product found with a Product Key on our license server. That scanning happens in real time, and the process is shown as a progress bar. When quitting, this process happens in reverse.

Once all the licenses are validated, a list on the left displays all MAAT products, including License Central. Products that are not installed are grayed out, and installed products are displayed in high contrast. To the right of each product entry is a check mark, which indicated that the product is licensed.

Selecting a product entry displays information about the installed version and if an update is available for download.

Controls

There are two persistent buttons along the top. At upper left is Check for Updates, which refreshes the list of installed products, and pings our server again for currently available versions to download. It also recreates your Product Key list.

At upper right, the Activate/Deactivate button brings up the familiar blue and orange MAAT license window, allowing you to deactivate or return your license to the Cloud, and to switch to a 30 day temporary offline license. If you have requested a 365 day full offline license, use the Create License Request function in the MAAT license window, and have received your ".maatc" confirmation file, you can also take your license offline. Finally, you can also paste in a Product Key to activate a new license.

Note: Switching to 30 day temp offline requires that your license be already activated. 365 day full offline licenses require a license confirmation file as supplied by MAAT's support department.

If any product is out of date, a third Download Update button will appear when that product is selected. This button is an express method for updating you MAAT products.

At bottom left of the License Central window is an Auto–Refresh check box, which is selected by default. Deselecting that will prevent License Central from frequently scanning your host for changes including new installs. It starts a scan every 3 seconds, waiting for completion of that scan, then begins a new 3 second countdown before starting the next scan. If you find that License Central is interrupting you workflow while scanning, then disable Auto–Refresh.

Preferences

In License Central, the Preferences' gear icon brings up the Preferences window with four tabs.

Paths

For those who set up alternate directories for the management of their plug–ins in a DAW, two alternate plug–in paths can be defined. These directories will be also included when License Central searches.

Keys

This tab lists all of your Product Keys that are known to our license server. Please take a moment to copy all of your Product Keys, paste them into a text or word processor file, and print out a hard copy. Your Product Keys are your proof of purchase and, without them, your purchase will not work and we cannot provide product support.

Troubleshooting

The Troubleshooting tab has one button, which generates a Diagnostics Report. This report, automatically written to the Desktop, gathers useful, non–personal information about your machine's state that our support team can use to diagnose any problems.

Info

As with all our products, the Info tab lists credits, copyright information, and the version number you are running.

Share The Love

Would you like to help us in our quest for better sound quality? Help support MAAT by sharing the love…Like us on Facebook!

https://www.facebook.com/maatdigital/

and Twitter too:

https://twitter.com/maat_digital

Please tell your friends and colleagues about us. We really appreciate it, and thank you for supporting better quality audio.

Credits

DR concept & realization:

> Friedemann Tischmeyer, PMF & MAAT Inc.

Technical & project management:

> Dr. Christoph Musialik, MAAT Labs GmbH

Programming:

> Agent Tad Nicol, MAAT Inc.

> Adam, Agent of Shield, MAAT Inc.

Product Development:

> Oliver Masciarotte

Programming for the original TT Edition:

> Dr. Ulrich Hatje, Algorithmix GmbH

> Sir Duane Wise, Wholegrain Digital Systems LLC

Support

For product support, please visit:

> https://www.maat.digital/support

Would you like to help MAAT? Help support MAAT by sharing the love…Like us on Facebook:

> https://www.facebook.com/maatdigital/

and Twitter:

> https://twitter.com/maat_digital

and tell your friends about us!

Appendix 1

Estimated Loudness Normalization Settings for Select Streaming Services					
	Target Loudness (LUFS)	**Measur-ing**	**Default**	**Gain Added**	**Limiting**
Hulu	-24	-	Enabled	Yes	?
iTunes Music	-16	Both	Disabled	Yes	No
Netflix	-18	-	Enabled	?	No
Pandora	-14	Track	Enabled	Yes	?
Spotify	-14	Both	Enabled	Yes	Yes
TIDAL	-14	Album	Enabled	No	No
YouTube	-12	Track	Enabled	No	No

About This Manual

This manual was written in Adobe InDesign 15.1.1, and is set in Robert Slimbach's Minion Pro and Myriad Pro. The cover page is set in Aldo Novarese's modernist geometric Eurostyle.

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