Level Magic™ - Recommended Settings

Level Magic™ is a comprehensive loudness measurement, correction and management algorithm designed to ensure compliance with all current worldwide loudness standards. Based on the underlying ITU-R BS.1770(-1/2/3/4) principle, Level Magic provides compatibility with EBU R128, ATSC A/85, ARIB TR-B32, FREE TV OP-59 and Portaria 354.

Designed to be audibly transparent, Level Magic™ utilizes a proprietary multi-loop approach comprising of three essential elements in parallel to measure, and if necessary correct, out of specification audio.

An **AGC** section controls slower changing levels over time whilst a **fast acting transient processor** catches inaudible high frequency overshoots that may otherwise cause detrimental effects in downstream processing or coding.
A brick wall filter provides effective Distortion-free **True Peak Limiting** using a 2ms look-ahead to capture any intersample peaks.
The resultant gain changing signal is a combination of all three elements.

The Level Magic™ algorithm is highly adaptive to the structure of the incoming audio and requires only a small number of parameters to be set by the user as explained in the following parameter tables.
The result is audio compliant with the selected standard but free of any unwanted artefacts such as pumping, breathing or distortion.

Table 1: General Settings (no specific Loudness Mode)

	"Moderate"	"Loudness Limiter"	"Movie"	"Universal"	"News Live"	"Interstitials"
Leveler	On	On	On	On	On	On
Processing Profile	Classic	Classic	Classic	Uni	Speech	Pop
Loudness Target / Operating Level	X	X	X	X	X	X
Time	2 min	20 s	1 min	1 min	20 s	10 s
Max Gain	3 dB	1 dB	10 dB	10 dB	12 dB	6 dB
Freeze Level	X-25 dBFS	X-25 dBFS	X-20 dBFS	X-25 dBFS	X-25 dBFS	X-25 dBFS
Transient Processor						
Max Gain	3 dB	0 dB	6 dB	5 dB	12 dB	6 dB
Response	soft	soft	soft	mid	hard	mid
Limiter	On	On	On	On	On	On
Processing Profile*	Uni	Uni	Uni	Uni	Pop	Pop
Max True Peak / Max Peak Level	-2 dBTP / X+6...9 dBFS	-2 dBTP/ X+6...9 dBFS	-2 dBTP/ X+6...9 dBFS	-2 dBTP/ X+6...9 dBFS	-2 dBTP/ X+6...9 dBFS	-2 dBTP/ X+6...9 dBFS
Expert Mode**						
Initial Dynamic Gain	0	0	0	0	0	-3
AGC Recovery	fast	fast	fast	fast	fast	fast
Processing Threshold	X-45 dBFS	X-45 dBFS	X-45 dBFS	X-45 dBFS	X-45 dBFS	X-45 dBFS
Below Threshold Mode	Release	Release	Release	Release	Release	Release

For 'X' enter your desired loudness target (or operating level) value. Typical settings are -24 LKFS (ITU based recommendations) or -23 LUFS (EBU). Calculate all 'X-' and 'X+' values accordingly.

** Limiter Processing Profile may not be present in some implementations. In this case Leveler Processing Profile is valid for Limiter also*
*** Expert mode settings may not be present in some implementations*

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Table 2: Recommended Settings for EBU R128
valid also for Portaria 354

	"Moderate"	"Loudness Limiter"	"Movie"	"Universal"	"News Live"	"Interstitials"
Leveler	On	On	On	On	On	On
Processing Profile	Classic	Classic	Classic	Uni	Speech	Pop
Loudness Target / Operating Level	-23 LUFS	-23 LUFS	-23 LUFS	-23 LUFS	-23 LUFS	-23 LUFS
Time	2 min	20 s	1 min	1 min	20 s	10 s
Max Gain	3 dB	1 dB	10 dB	10 dB	12 dB	6 dB
Freeze Level	-40 dBFS	-40 dBFS	-35 dBFS	-40 dBFS	-40 dBFS	-40 dBFS
Transient Processor						
Max Gain	3 dB	0 dB	6 dB	5 dB	12 dB	6 dB
Response	soft	soft	soft	mid	hard	mid
Limiter	On	On	On	On	On	On
Processing Profile*	Uni	Uni	Uni	Uni	Pop	Pop
Max True Peak	-1 dBTP	-1 dBTP	-1 dBTP	-1 dBTP	-1 dBTP	-1 dBTP
Expert Mode**						
Initial Dynamic Gain	0	0	0	0	0	-3
AGC Recovery	fast	fast	fast	fast	fast	fast
Processing Threshold	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS
Below Threshold Mode	Release	Release	Release	Release	Release	Release

* Limiter Processing Profile may not be present in some implementations. In this case Leveler Processing Profile is valid for Limiter also
** Expert mode settings may not be present in some implementations

Level Magic™ - Recommended Settings

Table 3: Recommended Settings for ITU 1770
valid for ITU BS.1770-1, ITU BS.1770-2, ITU BS.1770-3, ITU BS.1770-4, ARIB TR-B32

	"Moderate"	"Loudness Limiter"	"Movie"	"Universal"	"News Live"	"Interstitials"
Leveler	On	On	On	On	On	On
Processing Profile	Classic	Classic	Classic	Uni	Speech	Pop
Loudness Target / Operating Level	-24 LKFS	-24 LKFS	-24 LKFS	-24 LKFS	-24 LKFS	-24 LKFS
Time	2 min	20 s	1 min	1 min	20 s	10 s
Max Gain	3 dB	1 dB	10 dB	10 dB	12 dB	6 dB
Freeze Level	-40 dBFS	-40 dBFS	-35 dBFS	-40 dBFS	-40 dBFS	-40 dBFS
Transient Processor						
Max Gain	3 dB	0 dB	6 dB	5 dB	12 dB	6 dB
Response	soft	soft	soft	mid	hard	mid
Limiter	On	On	On	On	On	On
Processing Profile*	Uni	Uni	Uni	Uni	Pop	Pop
Max True Peak	-1 dBTP	-1 dBTP	-1 dBTP	-1 dBTP	-1 dBTP	-1 dBTP
Expert Mode**						
Initial Dynamic Gain	0	0	0	0	0	-3
AGC Recovery	fast	fast	fast	fast	fast	fast
Processing Threshold	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS
Below Threshold Mode	Release	Release	Release	Release	Release	Release

* Limiter Processing Profile may not be present in some implementations. In this case Leveler Processing Profile is valid for Limiter also
** Expert mode settings may not be present in some implementations

Level Magic™ - Recommended Settings

Table 4: Recommended Settings for ATSC A/85
valid for ATSC A/85 (2011), ATSC A/85 (2013), FreeTV OP-59

	"Moderate"	"Loudness Limiter"	"Movie"	"Universal"	"News Live"	"Interstitials"
Leveler	On	On	On	On	On	On
Processing Profile	Classic	Classic	Classic	Uni	Speech	Pop
Loudness Target / Operating Level	-24 LKFS	-24 LKFS	-24 LKFS	-24 LKFS	-24 LKFS	-24 LKFS
Time	2 min	20 s	1 min	1 min	20 s	10 s
Max Gain	3 dB	1 dB	10 dB	10 dB	12 dB	6 dB
Freeze Level	-40 dBFS	-40 dBFS	-35 dBFS	-40 dBFS	-40 dBFS	-40 dBFS
Transient Processor						
Max Gain	3 dB	0 dB	6 dB	5 dB	12 dB	6 dB
Response	soft	soft	soft	mid	hard	mid
Limiter	On	On	On	On	On	On
Processing Profile*	Uni	Uni	Uni	Uni	Pop	Pop
Max True Peak	-2 dBTP	-2 dBTP	-2 dBTP	-2 dBTP	-2 dBTP	-2 dBTP
Expert Mode**						
Initial Dynamic Gain	0	0	0	0	0	-3
AGC Recovery	fast	fast	fast	fast	fast	fast
Processing Threshold	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS	-70 dBFS
Below Threshold Mode	Release	Release	Release	Release	Release	Release

* Limiter Processing Profile may not be present in some implementations. In this case Leveler Processing Profile is valid for Limiter also
** Expert mode settings may not be present in some implementations

Terms as used in our Parameter-Tables:

"Moderate"
This is a very universal preset with minimal audible impact for inputs of known quality. Ideal for signals that are on target most of the time and to balance overall loudness.

"Movie"
Ideal for matching cinema movies to TV playback systems. It controls the normally quite large loudness and dynamic range of films that are meant to be played back in cinemas.

"News Live"
This has a strict processing that keeps the incoming signal right at target. Heavy processing can take place.

"Loudness Limiter"
This is meant to be used with signals that do not require amplification but reach high in loudness from time to time and thus require attenuation. The Level Magic is not allowed to bring up softer signals but to tame too loud parts.

"Universal"
Ideal for programs with unknown dynamic structure and loudness values. Although quite big level changes are possible it remains on the neutral side of things.

"Interstitials"
A setting for processing of commercials and other short period programs. A rather heavy setting with short time constants.