



## KLIPPEL QC SYSTEM - FEATURE OVERVIEW

Valid for QC Software Version 5 / dB-Lab version 210  
 June 2017  
 For details please see specifications under [www.klippel.de](http://www.klippel.de).

	QC STANDARD	QC BASIC	QC Stand-alone Software	QC tasks in R&D 210
<b>Measurements / Features of QC SYSTEM:</b>				
Amplitude frequency response	✓	✓	✓	opt.
Windowing of impulse response	✓	✓	✓	opt.
Phase response	✓	✓	✓	opt.
Mean level(s) in frequency band(s)	✓	✓	✓	opt.
Polarity	✓	✓	✓	opt.
Time delay	✓	✓	✓	opt.
Electrical impedance	✓	✓	-	opt.
Resonance frequency $f_s$	✓	✓	-	opt.
Loss factor $Q_{ts}$	✓	✓	-	opt.
DC resistance $R_e$	✓	✓	-	opt.
Vented box parameters ( $Q_B, f_B$ )	✓	-	-	opt.
Pass / Fail statistics	✓	✓	✓	✓
Limits calculated automatically	✓	✓	✓	✓
Flexible data export	✓	✓	✓	✓
THD+ Noise	✓	✓	✓	✓
2nd-5th order harmonics (IEC and IEEE standard)	✓	✓	✓	✓
Rub & Buzz, loose particle, loose connection & drop out detection	✓	✓	✓	✓
Advanced limit algorithms (Jitter)	✓	✓	✓	✓
On- and Off-line statistics for yield and single value results, histogram analysis	✓	✓	✓	✓
External control of Klippel QC (IOMonitor)	✓	✓	✓	✓
3 <sup>rd</sup> party audio interface in/output	✓	✓	✓	✓
Measurement without Production Analyzer hardware	-	-	✓	
Real-time monitoring of microphone signal	✓	✓	✓	✓
IO Task (control digital interface, user interaction)	✓	✓	✓	-
Klippel Analyzer hardware control (mic power supply, volt / current measurement)	✓	✓	-	✓
Digital Interface (Results, Start switch)	✓	✓	-	✓
Ultra-fast testing (Speed Profile)	✓	-	✓	✓
Stimulus shaping (Level Profile)	✓	-	✓	✓
Ambient noise detection (2. microphone, considering test enclosure)	✓	-	✓	✓
Measure noise attenuation of test enclosure	✓	-	✓	✓
All linear T/S parameters	✓	-	-	✓
Force factor BI (added mass)	✓	✓	-	✓
Moving mass $M_{ms}$ (added mass)	✓	✓	-	✓
Select golden reference units (on-line and off-line)	✓	-	✓	-
Manual sine sweep with waveform and spectral analysis	✓	-	✓	✓
Process indices $C_{pk}, P_{pk}$ , Process control (Wecco, Nelson rules)	✓	-	✓	✓
Grading (multiple limits for grade classification)	✓	-	✓	✓

opt.: optional task; available with appropriate QC-task license



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<b>Optional Tasks:</b>				
<b>MHT Option: Meta-Hearing Technology</b>				
Isolated Defect Distortion (IDD)	✓	-	✓	✓
Active compensation of regular distortion	✓	-	✓	✓
<b>PNI Option: Production Noise Immunity</b>				
Auto repeat + intelligent merging	✓	-	✓	✓
Full noise immunity	✓	-	✓	✓
<b>MSC Task: Motor-and-Suspension-Check</b>				
Voice coil offset	✓	-	-	✓
Suspension asymmetry	✓	-	-	✓
Force factor limited displacement	✓	-	-	✓
Compliance limited displacement	✓	-	-	✓
Port resonance frequency $Q_b$ , $f_b$	✓	-	-	✓
<b>BAC Task: Balanced Armature Check</b>				
Armature offset	✓	-	-	✓
Linear parameters	✓	-	-	✓
High-speed testing	✓	-	-	✓
<b>ALD Task: Air Leak Detection</b>				
MODulated distortion - detect air leakage	✓	-	✓	✓
DETerministic distortion - detect driver defects	✓	-	✓	✓
Random distortion - detect loose particles	✓	-	✓	✓
Integration of MODulated and DETerministic distortion in SPL Task	✓	-	✓	✓
Noise immunity (auto repeat)	✓	-	✓	✓
<b>ALS Task: Air Leak Stethoscope</b>				
Localize air leakage and other defects	✓	-	✓	✓
Auralization of defect symptoms	✓	-	✓	✓
<b>EXD Task: External Devices</b>				
High-level GPIB support (IEEE 488 & 488.2)	✓	-	✓	✓
Control and include external measurement instrumentation equipment	✓	-	✓	✓
Flexible test sequence	✓	-	✓	✓
<b>EQA Task: Equalization + Alignment</b>				
Automatic source equalization (level profile)	✓	-	✓	✓
Manual and assisted alignment of voltage / level	✓	-	✓	✓
Manual and assisted alignment of frequency response	✓	-	✓	✓



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<b>LST Task: Linear Suspension Test</b>				
Suspension part & passive radiator testing	✓	✓	-	✓
Resonance frequency of suspension part $f_0$	✓	✓	-	✓
Loss factor of suspension part $Q_0$	✓	✓	-	✓
Effective stiffness $k_0$	✓	✓	-	✓
Measure large parts using SPM hardware bench	✓	✓	-	✓
Mass deviation $\Delta m$ (LST Pro only)	✓	✓	-	✓
Stiffness deviation $\Delta k_0$ (LST Pro only)	✓	✓	-	✓
<b>MSP: Match-Speaker-Tool</b>				
Find best matching pairs from pool of speakers	✓	✓	✓	✓
Find best matching DUTs to target curve	✓	✓	✓	✓
<b>SYN Option: External Synchronization</b>				
Synchronize measurements with 3 <sup>rd</sup> party audio devices	✓	-	✓	✓
Measure stand-alone sound sources	✓	-	✓	✓
Cope with varying delays	✓	-	✓	✓
WAVE export of stimulus sequence	✓	-	✓	✓
WAVE import and analysis of recorded responses	✓	-	✓	✓
Use stimulus or unique noise ID for synchronization	✓	-	✓	✓