The iSEMic® CPX1212 measurement microphone & kit

OVERVIEW

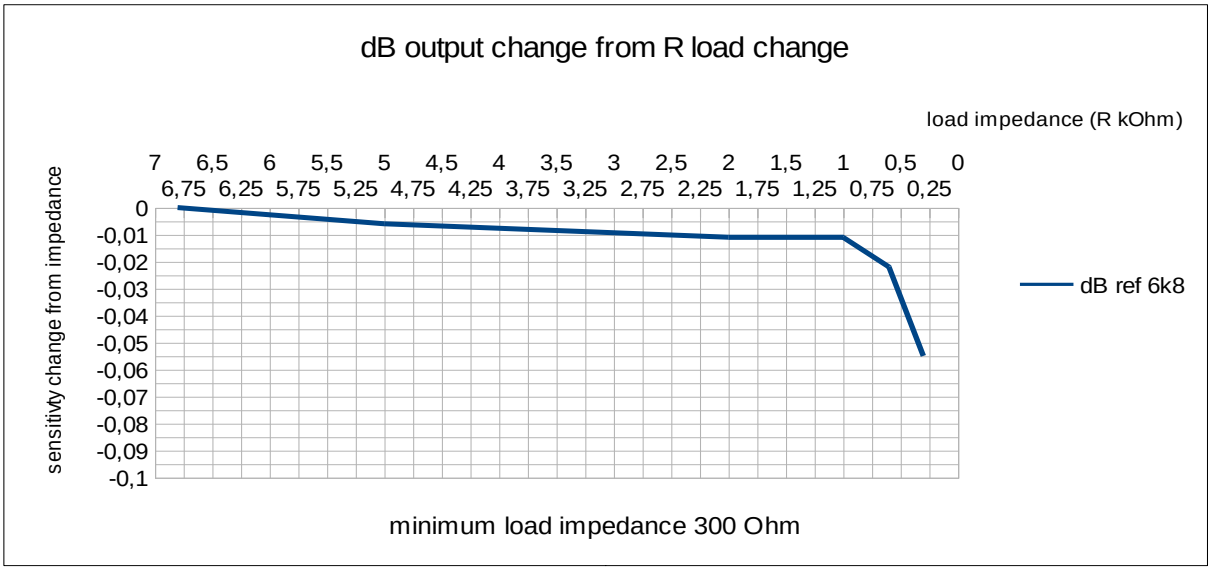
The microphone is a combination of the CPX12 series microphone preamp body and the FP1212 high SPL microphone cartridge. It is a modular design ready for other ½“ or ¼“ capsules to be combined with. The preamp is a special high SPL compliant design. High SPL requires a high microphone internal supply voltage derived from the Phantom power. Due to the nature of Phantom Power (48Volts over 6.8k resistors) the preamp has to have a very low power consumption with a high slew rate and low impedance drive. The input impedance of the microphone preamp being fed by the measurement mic should be as high as possible. Low supply current together with “a not” too low preamp input impedance reduces the voltage drop over the 6.8k supply chain resistors and results in both, a high internal supply voltage and highest mic output voltage possible… and BTW low self-noise is another feature!

It’s your application that counts.

TECHNOLOGY

The iSEMic CPX-12/12 phantom powered measurement microphone provides a high quality, cost effective solution for precise acoustic measurements. The CPX-1212 microphone consists of the FP1212 class 1 mic capsule (as per IEC61094-4), a CPX-12 body and comes with the calibration data for both, freefield and diffusefield, a holding clamp and the WS-12 windscreen included. The iSEMic preamp offers low noise and a wide dynamic range with a max. 10Vrms (28Vpp) output (no clipping) while being powered from 48V of phantom power. The microphone is fully specified for 12, 24 and 48Volts of phantom power (IEC 12345) with very low power requirements in combination with the high SPL handling capability. P48 powered it can handle 155dBspl and 142dBspl while being powered from 12V of Phantom Power (Ideal for wireless measurement use). The nickel diaphragm capsule remains stable during temperature, humidity and atmospheric pressure changes unlike capsules based on Mylar/Polyester diaphragms. This yields in more accurate test results.

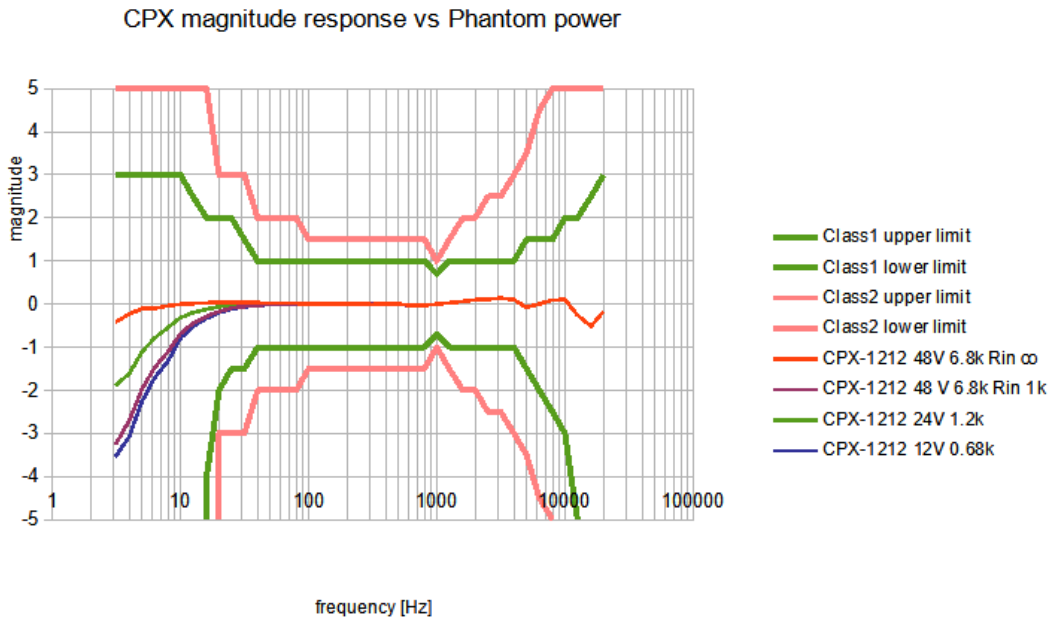
It is a transformerless impedance balancing design with low impedance drive capability. The microphone unparalleled performance accepts load impedances of 6.8 kOhm (open circuit) down to 300 Ohm with extremely low voltage drop. See diagram below.



No matter what microphone preamplifier or computer interface you use, the CPX-12/12 can drive the input. Great to know when you have to change the measurement setup and equipment from venue to venue.

PERFORMANCE

The iSEMic CPX12 series comes in a neutral stainless-steel design with a linear and extended frequency bandwidth. It is a high-SPL optimized recording and calibration mic with unmatched dynamics. It can be powered from P12 to P48 phantom power. The close-miking capability combined with a linear on-axis response in an extended frequency range from 6 Hz to 40 kHz (w/ FP1212) makes it suitable for a wide range of applications in Speaker Manufacturing, Sound Reinforcement, SPL monitoring and Clean Sound Recording. Due to its qualities and modularity, it can be used as a reference microphone in acoustic test equipment.



iSEMcon®

FEATURES

- Destined d to become a new measuring reference
- Linear response up to 80 kHz (CPX body)
- Unequivocal dynamic range exceeds 20…155dBspl from noise floor to 3%THD limit
- Extreme SPL handling up to 156 dB (5% THD, P48, open circuit 6.8kOhm, FP1212 capsule)
- Modular
- Compatible with iSEMcon and third party ½" IEC 61094-4 compliant microphone capsules.
- 16 dBA noise floor, 4Hz…80 kHz compatibility based on microphone cartridge used. 25dBA w/ FP1212 High SPL capsule

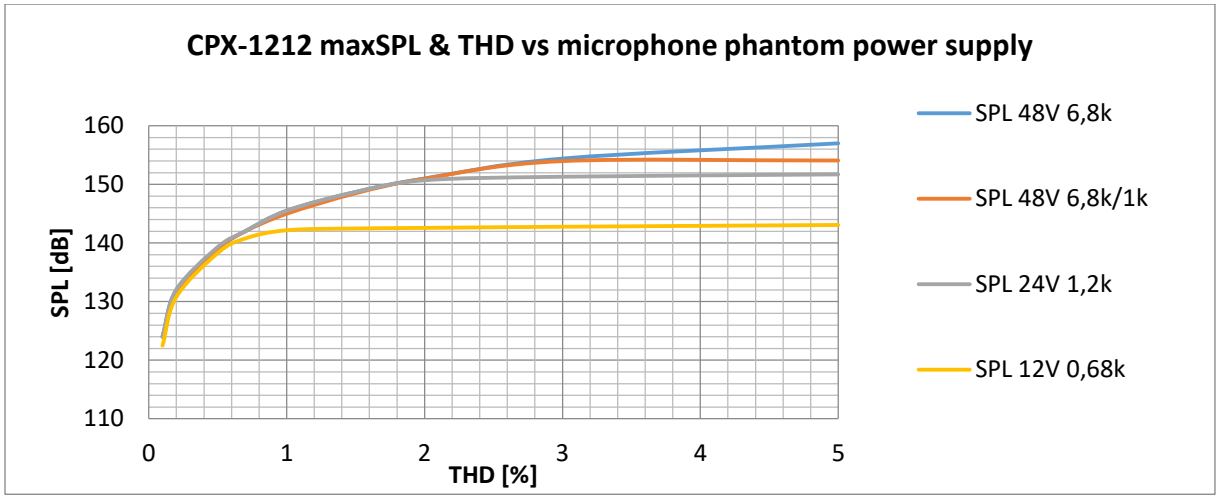
SPECS (more data will follow)

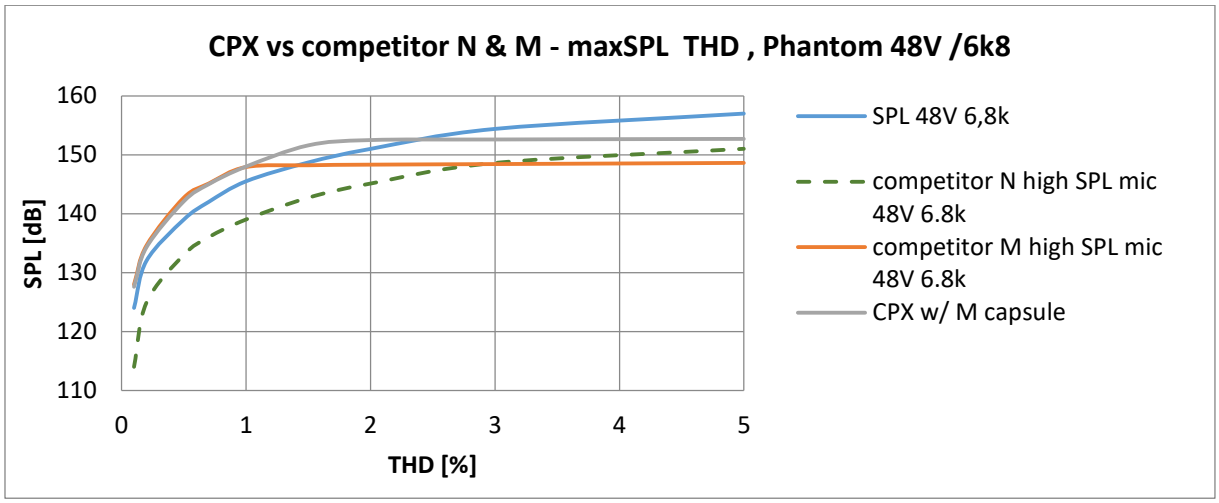
- High SPL Specified, lower bandwidth, 28Vpp (10Vrms) P48, input impedance >5k
- Nominal (General use) SPEC, 20Vpp, P48, 6Hz to 40 kHz, min load impedance 1k or up to 80kHz 15Vpp
- Low impedance drive SPEC, min load impedance 300 Ohms
- P48, P24 and P12 Phantom power specified

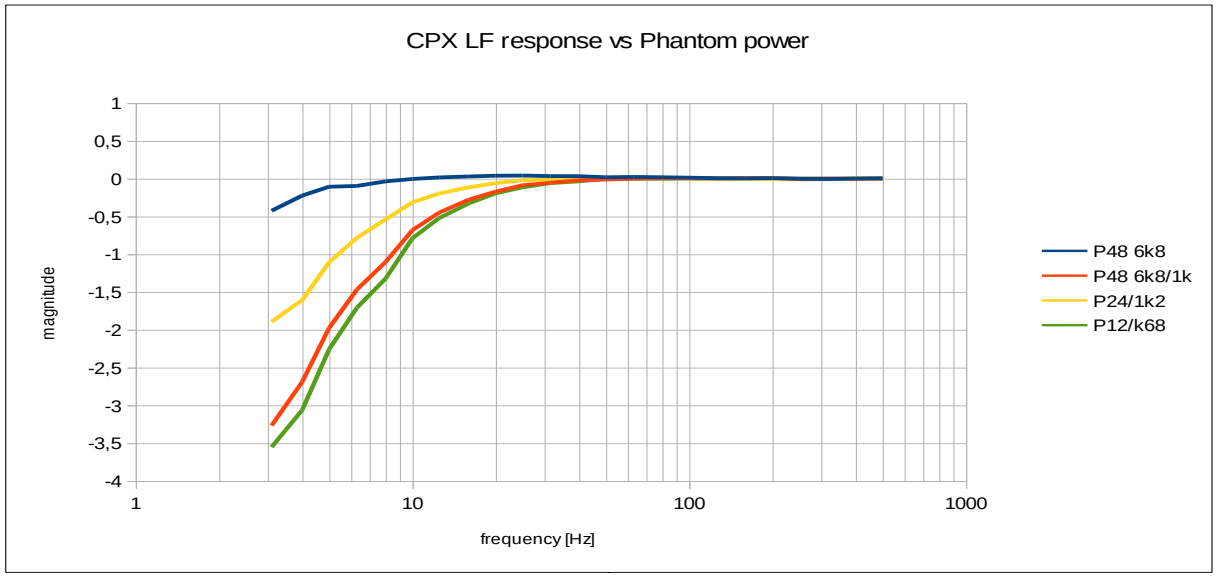
PRELIMINARY		
Microphone Set CPX-1212		
Classification as per IEC 61672	class 1	
Consists of	CPX12 & FP1212	
Microphone type	capacitive condenser	
Directivity	omndirectional	
Polarization	prepolarized	
Field type	freefield	
Frequency range, nominal	6Hz to 80kHz	Output voltage/load dependent.
48V Phantom 6.8k into1k load, 20Vpp	6Hz to 40kHz	
48V Phantom 6.8k into1k load, 15Vpp, 3% dist, -3dB	6Hz to 80kHz	
48V Phantom 6.8k open circuit, 28Vpp	3Hz to 20kHz	
Gain 22pf input to output 1k load	-1,4dB	Dummy microphone 22pF
Noise floor	25dB(A) w/capsule	
Max SPL	156,5 dB <5% dist,	with FP1212
SPL 3% dist P48 / 6.8k Rin 100k	154,5 dBspl	with FP1212
SPL 3% dist P48 / 6.8k Rin 1k	154,0 dBspl	with FP1212
SPL 1% dist P48 / 6.8k Rin 1k	145,5 dBspl	with FP1212
SPL 0.5 % dist P48 / 6.8k Rin 1k	139,5 dBspl	with FP1212
SPL 3% dist P24 / 1,2k	150,5 dBspl	with FP1212
SPL 3% dist P12 / 0.68k	142,0 dBspl	with FP1212
Sensitivity mV/Pa	8mV typ.	
Temperature range	-10°C...+50°C (14F...122°F)	
rel Humidity	5...90% non-condensing	
Power supply / current consumption		
P48 / 6.8k open circuit	2mA	@114dBspl
P48 / 6.8k Rin 1k	2mA	@114dBspl
P48 / 6.8k Rin 300R Max current, >10% THD, clipping	6,5mA	
P24 / 1,2k	0,5 mA	@114dBspl
P12 / 0.68k	0,3 mA	@114dBspl
Output impedance	10 Ohm – low impedance drive	theoretical value

Connectivity	XLR 3pin	
Dimensions		
Diameter	body 19mm (3/4“)	
Length body	150mm (5 9/10“)	
Length w/ FP1212 capsule	156mm (5 7/6“)	
Weight (kit)	500g (17.4oz)	
Environmental protection	IP60*1	
Diffuse field sensitivity correction	see ref table.	
Technical data preamp CPX-12		
Frequency range	6Hz...80kHz	
Noise floor	1,9uV(A) typ.	
Max output voltage	>28Vpp continious 1kHz sine	no clipping
Short time peak voltage	>30Vpp	
P48 / 6.8k open circuit	28 Vpp	no clipping
P48 / 6.8k Rin=1k	23,5 Vpp	no clipping
P24 / 1,2k	14 Vpp	no clipping
P12 / 0.68k	5,3 Vpp	no clipping
Power supply, absolute maximum rating	11...52V Phantom (IEC1938)	
Power consumption, absolute maximum rating	7 mA peak	
Capsule thread	11.7 60UNS-2B (IEC 1094-4)	
Connectivity	XLR 3 pin	
Weight	100g (3,5 oz)	
Dimensions	150mm (5 9/10“	
Temperature range	-10°C...+50°C **(**14F...122°F**)**	
Humidity	5...90% non-condensing	
Impedance	10 Ohm typ.	
Technical data capsule FP-1212		
Type (IEC 1094-4)	WS2F	
Field Type	freefield	
Nominal capsule size	½“	
Frequency range (typ)	20...40kHz	
Capsule sensitivity (open circuit, typ.)	12mV	
Dynamic range (1% dist, typ)	25...155dB(A)	
Polarization voltage	0V	
Diameter, max.	13.2mm	
Height	12.3mm	
Self-noise	25dB(A)	
Technical data capsule FP-1250	coming soon	
Type (IEC 1094-4)	WS2F	
Field Type	freefield	
Nominal capsule size	½“	
Frequency range (typ)	20...20kHz	
Capsule sensitivity (open circuit, typ.)	50mV	
Dynamic range (1% dist, typ)	16...146dB(A)	
Polarization voltage	0V	
Diameter, max.	13.2mm	
Height	17.6mm	

Self-noise	16dB(A)	







APPLICATIONS

- Loudspeaker Design and testing
- Building Acoustics
- Real-time Analysis (Live Sound SPL, System setup)
- Acoustic modeling
- High Quality Recording

Diffusefield Sensitivity and Level Correction

A diffuse sound field is characterized by the sound arriving at the capsule from all directions. The CPX12/12 is a freefield equalized measurement microphone with a linear frequency response referring to a 0° sound incidence. It's diffusefield sensitivity level correction is calculated by measuring and averaging the directional characteristics (according to IEC 61183). The corrections factors are as follows:

Frequency (kHz)	<1	1	1.25	1.6	2	2.5	3.15	4	5	6.3	8	10	12.5	16	20
Magnitude correction	0	0	0.1	0.18	0.22	0.33	0.62	0.85	1.37	1.83	2.66	3.51	4.54	6.15	8

ACCESSORIES

Coming soon

ORDER INFORMATION

Coming soon