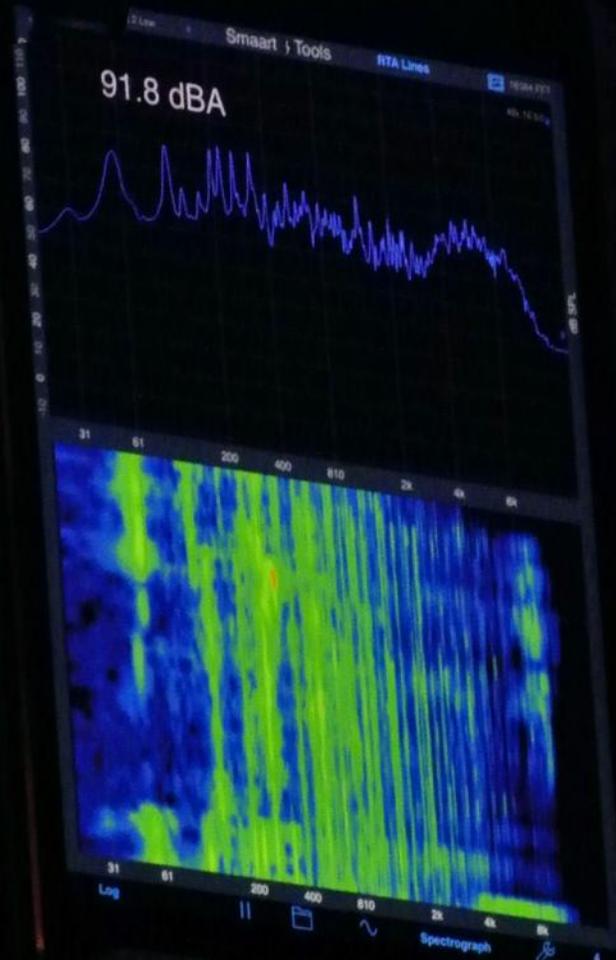


**iSEMcon**<sup>®</sup>  
ACOUSTICS & VIBRATION DIVISION

„ONE MIC SERVES ALL“



Calibration data ?!  
visit

[my.isemic.com](http://my.isemic.com)

**DATASHEET iSEMic 725TR**  
Microphone & Accessories

## AT A GLANCE

The 1/4" iSEmic Microphone and Accessories Series is supply and signal voltage compatibility to iPhone\*1, iPad\*1 as well as other mobile devices including laptop computers and Phantom Powered Pro Audio Equipment. The superb functionality is provided by the space saving microphone built-in electronics.

The advantages of the new iSEmic microphone series are obvious. Mobile devices like iPad's and iPhone's are more and more used for controlling live sound mixers and PA Systems giving the FOH and system engineers the possibility of walking the venue while optimizing for sound and acoustics using special apps on mobile devices.

Back at the FOH place the same microphone can be used to service the PC or MAC computer by the use of an off-the-shelf USB interface and XLR cable.

With its mechanically robust design it is well suited for harsh environment use such as open air sound reinforcement measurements. Its class 2 frequency response makes it predestined for room acoustics analysis including recording studios and home theaters. It can normally be used without the included freefield calibration data file for compensation. In this case take the individual calibration data as proof of its superb performance.

## MULTI STANDARD MICROPHONE

- **Excitation voltage 2.5V to 52Vdc** , current limited
- Powers from: **iPhone, iPad, other mobile devices, laptop computers, Phantom Power, ICP/IEPE power.**
- **Microphone sensitivity typ -52dB re 1V/pa** (2,5mV @ 94dBspl)
- Sensitivity optimized for **mobile devices** (e.g. iPad) **not to clip.**
- Frequency range **20Hz...>20kHz**
- **Temperature compensated** for accurate **SPL monitoring.**
- **IEC 61672 class 2** frequency response **Standard (125dBspl)**
- **Surge voltage protection**
- **Calibration** chart and freefield- & diffuse-field calibration data files download ready.
- **Stainless steel** body, **Gold plated** connectors
- Microphone body dia. **1/4" (7 mm)**
- Microphone length **3,7" (94 mm)**

## TYPICAL APPLICATIONS

- Sound-power and sound-field analysis
- Industrial Acoustics
- Room acoustics analysis
- Sound reinforcement
- Real time analyzers
- SPL monitoring (TEMPERATURE COMPENSATED electronics and capsule)

## iSEmic 725TR BASE KIT



725TR base kit includes

- **Individually calibrated iSEmic 725TR** (free and diffusefield data)
- **SA-iBF adapter** for iPad/iPhone use
- **Windscreen**

*packed in tin metal case as shown*

*\*1 The corporate names and names of the products stated in this brochure are trademarks or registered trademarks of the respective companies.*

## CONTACT

**iSEMcon LLC**  
PO Box 607  
Sylvania, OH 43560  
USA  
Fon 1-877-309-1002  
Fax 1-419-517-5007  
sales@iSEMcon.com

**iSEMcon GmbH**  
Zeppelinstr. 6  
68519 Viernheim  
Germany  
Fon +49 6204 911 24 91  
Fax +49 6204 911 24 90  
www.iSEMcon.com

# SPECIFICATIONS

Values for 23° Celsius

## PERFORMANCE

Frequency Response characteristic	Free-Field
Polarization Voltage	Prepolarized
Nominal Sensitivity @1kHz	3mV/Pa
Sensitivity temperature drift	See diagram
Microphone Polarity	Non-Inverting
Frequency Response calibrated	10...20.000 Hz
Frequency Response IEC61672 *1	class 2
Inherent Noise 100-10000 Hz	<30dB typ.
Inherent Noise 1/3 Oct.	<15dB typ.
Max. SPL. (3% distortion limit)	> 125dBspl
Max. SPL. (3% distortion) typ.	= 127 dBspl

## ELECTRICAL

Output Impedance	< 200 Ω
Supply voltage	2.5...52Vdc

## PHYSICAL

Housing Material	Stainless Steel
Sealing	O-ring/Polyurethane/Epoxy
Output Connector	SMB male
Dimensions	∅ ¼"(7mm) x 3.7"(94 mm)
Weight	0.3 oz (10g)

## CONFORMITY

IEC 61000-6-1;

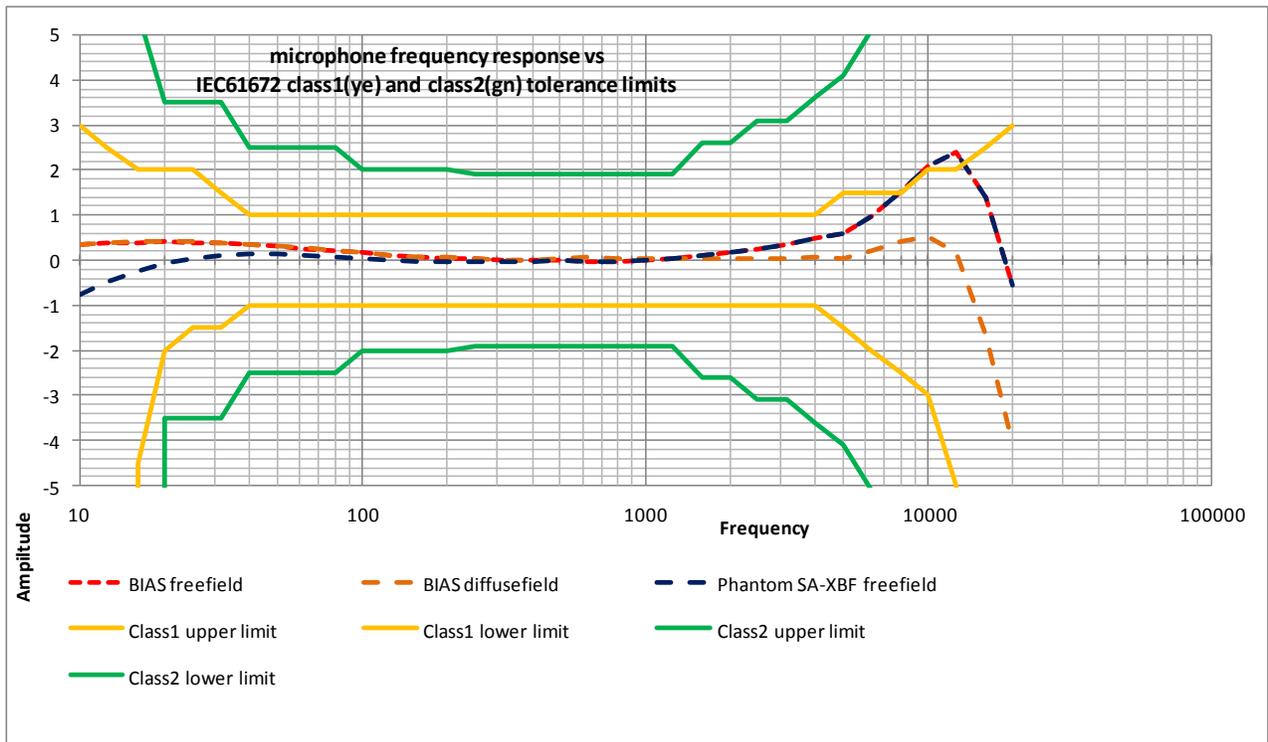
## ENVIRONMENTAL

Operating Temperature range	-10...+55°
Storage Temperature Range	-20...+90°
Operating Humidity Range	0...90%r.H.
Axial Vibration Sensitivity	~ 50dB

## SPECIAL FUNCTIONALITY

Voltage surge protection	✓
EMC noise filter	✓

# FREQUENCY RESPONSE



The diagram above shows the typical frequency response of an iSEMic 725TR microphone. Please note, that each microphone comes individually calibrated for freefield and diffusefield.

There is only a minor change in microphone sensitivity while being powered from Bias power (e.g. 2.7V 2.2k—iPad) or regular Phantom power (48V 6.8k).

Please note, that the use of the SA-XBF results in an about 1dB roll-off at 10Hz due to adapter internal coupling capacitors.

## CALIBRATION DATA FILE FORMAT

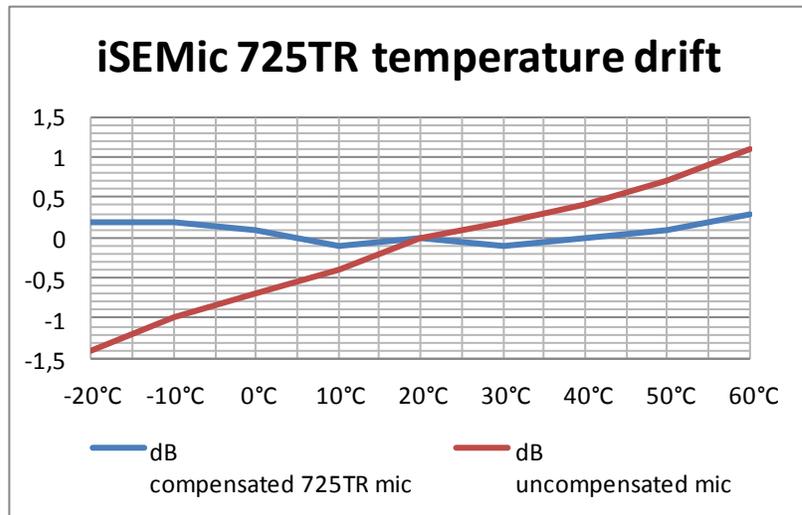
Human readable ASCII file: 1/6 octave

```

;www.iSEMcon.com freefield
;Sensitivity 2.40 mV/Pa @1kHz
10.00 -0.02
11.26 0.10
.....
1992.19 0.93
^ frequency (Hz) ^amplitude response (dB)
    
```

## TEMPERATURE STABILITY

The temperature characteristics of the sensitivity of an electret condenser microphone depends on the electrical characteristics of the microphone capsule built-in impedance converter and signal conversion circuitry as well as the acousto-mechanical characteristics of the diaphragm equivalent stiffness. iSEMcon is one of the first microphone manufacturers disclosing the secret about the temperature behavior of electrets based measurement microphones.



The range for the measurement was set at -20°C to 60°C which is more than iSEMcon microphones are normally used at. The most important temperatures are 10 °C up to about 50°C which covers indoor as well as open air use. It will give you a good predictable performance whether it is used in a cold autumn night or if the hot summer sun “burns” microphone body.

The table above shows the microphone sensitivity change at 1kHz. The microphone capsule itself is the part being responsible for most of the temperature change. The iSEMic electronics compensates for both the electronics itself as well as the microphone capsule.

Ref. 1kHz	dB	
	compensated 725TR mic	uncompensated mic capsule
Temp	-20°C	-1,4
	-10°C	-1
	0°C	-0,7
	10°C	-0,4
	20°C	0
	30°C	0,2
	40°C	0,4
	50°C	0,7
	60°C	1,1

(see also: *Temperature characteristics of electret condenser microphones Acoust. Sci. & Tech. 27, 4 (2006).*)

## ORDERING INFORMATION

Item	Name
480001	iSEMic 725TR base kit, 725TR microphone, SA-iBF adapter for iPhone/iPad, windscreen, brochure, individual calibration data (freefield&diffusefield) download from my.isemic.com at no cost, metal box.
400001	iSEMic 725TR, microphone bulk, without
460001	SA-iBF adapter (iPhone, iPad, others) CTIA/AHJ compliant
460002	SA-SBF adapter (others) OMTP compliant
460003	SA-XBF adapter, impedance symmetrical power and signal adapter. Current limiting.
460004	SA-CBF adapter, BNC to SMB adapter
460010	SA-BFM500 extension rod
470012	CX-P48/BF 5m, asymmetrical—hot input used. Cold shortened to gnd
470022	CX-BFBM 2m SMX extensions cable
470032	CX-TRSBF 2m 3.5mm stereo plug to SMB (laptop computer)
222020	MH-CH19 holding clamp
222050	MH-SH19 shockmount
220023	MH-07D/iSEMic-CA Microphone bushing
240030	WS-7XL windscreen
230300	CA-1/4/2 : 1/4" to 1/2" insertion adapter for 1/2" calibrators

## ACCESSORIES OVERVIEW

iSEMcon offers a large variety of accessories for the iSEMic series microphone such as cables, adapters and holders.

Please visit our shop pages for further information or contact your local dealer or sales rep.



## MICROPHONE BUSHING USE



The bushing can be used together with the holding clamp or shockmount to attach the microphone to a regular microphone desk or floor stand. It is best not to clamp the microphone body but the SMB connector to avoid scratches or deformations on the microphone body. Attach the extension cable to the microphone and insert the microphone into the clamp. Use the Allen-key to fasten the screw slightly.



## SA-XBF adapter

iSEMcon offers both an impedance symmetric Phantom Power adapter containing a special circuitry to match the iSEMic microphone to Phantom Power devices. The advantage of the full featured adapter is, that the mic draws power from the hot and the cold XLR input which makes it impedance symmetrical. The electronics also limits the power draw from both, the hot and the cold input (2mA each).



While using the full featured adapter there is an about 1dB frequency roll-off at 10Hz.



iSEMic 725TR with SA-XBF adapter in holding clamp.

## CX-P48/BF cable use



The microphone can also be used with a cost effective passive cable to be powered from Phantom Power. This is an asymmetrical solution and should be used for short distances only. The power draw is not limited by the cable but Phantom Power Circuitry (resistors) only (preamp or computer interface). The cold XLR input is shortened to ground.

## DO NOT !!!



The iSEMic microphone should not be plugged or unplugged into a mixer console or PA system unless the input channel is muted. If the system does not have a muting option the volume should be turned off. This avoids loud popping noise that can cause damage in speakers and/or affect your hearing.

Only a small percentage of all acoustical measurements are performed in a well defined and/or well controlled environment of an e.g. acoustical laboratory – on the contrary most acoustical measurements are done under not really controlled conditions. Here are some hints on how to use our microphone.

### Sound Fields:

Free field: There are no reflecting objects, only the microphone disturbs the sound field.

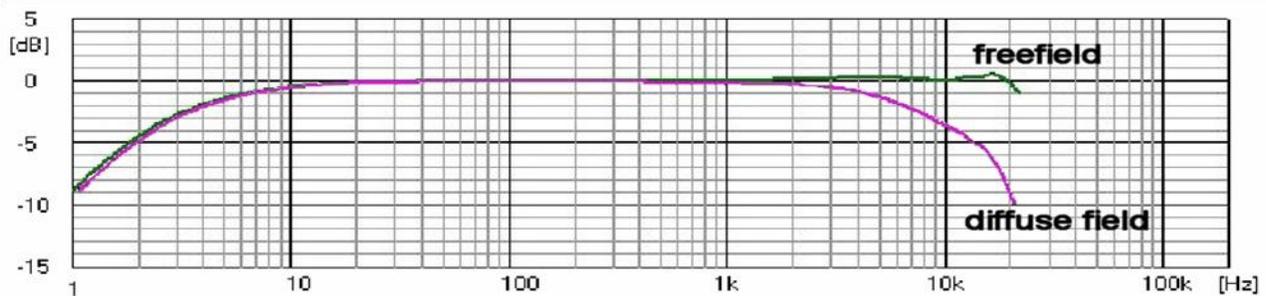
Diffuse field: There are many reflecting surfaces or sound sources so that the sound waves arrive from all directions.

Pressure field: This is found in small confined spaces like sound calibrators.

Depending on the nature of the sound field an appropriate microphone, which is optimized for the sound field could be selected. Unfortunately there are many practical situations where the sound field is not really of a well defined type. This application note should give you an idea on how to measure with a free field response microphone.

The free field microphone is the most common in use, chosen on tradition but we should know about the sound field.

The following picture shows both the free field and the diffuse field response of a free field mi-



The diffuse field response is not easy to measure, because it is not easy to generate a truly diffuse sound field over a wide frequency range but there is a known procedure to estimate the diffuse frequency behavior of a free field microphone.

From literature we know, that a microphone's random (diffuse) incidence response can be approximated by measuring the 90 deg incidence response relative to a single sound source.

While it is an approximation only iSEMcon has measured the 90deg response of many iSEMic 725TR microphones and used the averaged data to generate a 5<sup>th</sup> order polynomial. This is now used to approximate the "diffuse field" response from the microphones free field response data.



### Typical freefield measurement:

Speaker measurement. The microphone should target to the sound source (speaker)

### Typical diffusefield measurements:

Concert SPL monitoring (normally at FOH), Room Acoustics measurement (RT60): the microphone should not target to the sound source. Let it target to the ceiling. This is the most practical way.

