Studio Projects®

Studio Projects is manufactured and marketed under the direction of:

PMI AUDIO GROUP

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CS SERIES MICROPHONES

Instruction Manual

INSTRUCTION BOOK CONTENTS

WHAT IS STUDIO PROJECTS?

Based in Gardena, California, Studio Projects is a line of microphones and electronics started in 1999 by Alan Hyatt of PMI Audio Group. Our line of award winning microphones and preamps is a result of a partnership between PMI Audio and Beijing 797 Audio Co. LTD. a manufacturer of condenser microphones and professional audio products since 1952.

Within the line, there is a broad and evolving range of tools designed to provide the engineer and recordist with a level of sonic quality and durability. Studio Projects continues to prove that innovative designs and years of experience produce quality products that fit well in all professional and home applications.

If you have any questions or issues at any time, please feel free to contact us by phone or email, or log on to our web forum at http://www.pmiaudio.com/forums/.

GUIDELINES FOR PROPER CARE/USE

Large capsule capacitor mics such as the Studio Projects CS-Series, are built to handle a fairly substantial degree of abuse. However, one should always consider their investment and treat these mics with delicacy. The capsule itself is by far the most easily damaged component within the microphone. The biggest threat to a capsule is moisture and high humidity. A capsule corrupted by moisture, will lose sensitivity and exhibit a rumbling sound. This is due to the water molecules condensing within the very small gap between the diaphragm and backplate. When this occurs, the two plates cannot properly maintain their electrical charge. The result is that the microphone may become unusable and require repair. Since it is a lot more fun to make recordings than to send your mic to us for servicing, please consider the following:

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• Improper vocal recording technique is the primary cause of moisture-related capsule failure. Breathing on the transducer will cause the mylar diaphragm to immediately fog up. If this occurs repeatedly over time, the capsule will most likely short out.

This may seem a bit ironic, since the microphones are intended for vocal use, but with proper care and technique, these problems can be avoided. One easy way to prevent moisture from reaching the capsule is to put some distance between the vocalist and the microphone. A distance of six to twelve inches is acceptable. It is common to see stage performers singing directly into the grill of a handheld unit, but these are generally dynamic microphones, which are much more robust and employ an entirely different operating principle - which is not nearly so susceptible to moisture. Additionally, large diameter capacitor microphones are quite sensitive. It is not necessary to get right up on the grill. Doing so may in fact result in artifacts such as sibilance and popping. For reference, it may be of help to look up a picture of Frank Sinatra or Billie Holiday to observe how these legends placed themselves in relation to their microphones.

• A pop filter is a device, used as an additional layer of protection between vocalist and microphone. Ideally suited for this purpose is the Studio Projects part# SP-MPF. Additional benefits of the use of a pop filter are the reduction of plosives and sibilance. Studio Projects recommends the use of a pop filter for all vocal work where vocalist and microphone are in close proximity.

• Provided with all Studio Projects CS-Series microphones is a hard shell case. When not in use, storing the microphones in these provided accessories will help to protect them from moisture, dust, scratches and dents.

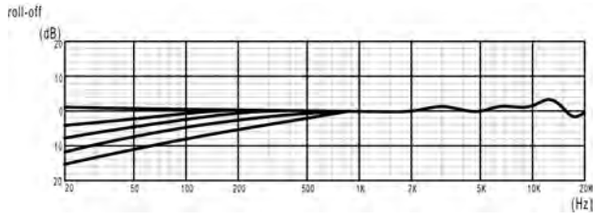
ELECTRICAL FEATURES

The CS1 and CS5 require +48-volt phantom power to operate. Verify that your gain device (preamp, mixing console, etc.) provides this feature. Both CS microphones are solid state devices with externally polarized transducers, FET impedance conversion circuitry and active outputs. Their individual circuit topologies provide low noise and high sound pressure handling capabilities.

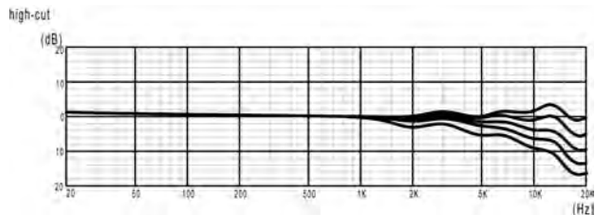
OPERATION

Make sure that +48-volt phantom power is active and gain is not at a level sufficient to cause ear-splitting feedback through monitor speakers. Use a female to male 3-pin XLR cable to connect microphone to gain device (preamp, mixing console, etc.). Address microphone from the side above the SP logo badge. Enjoy.

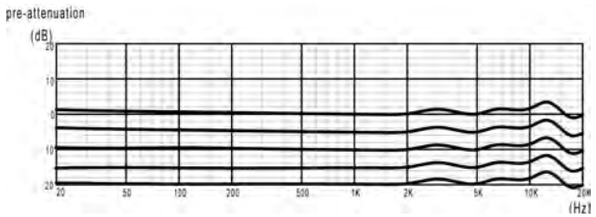
If bass cut is needed, four selectable high pass filters are available at the following frequencies; 50Hz, 75Hz, 150Hz and 300Hz. If you are looking at the back of the CS1/5, this would be the rotary switch on the left. The frequency response graph is shown below, along with the four filter curves:



In addition to the four high pass filters, there are also four selectable low pass filters which provide 6dB/octave attenuation of high frequencies at: 15kHz, 7kHz, 5kHz or 3kHz. Looking at the back of the CS1/5, the rotary switch on the right controls the low pass filter section. The frequency response graph is shown below, along with the four filter curves:



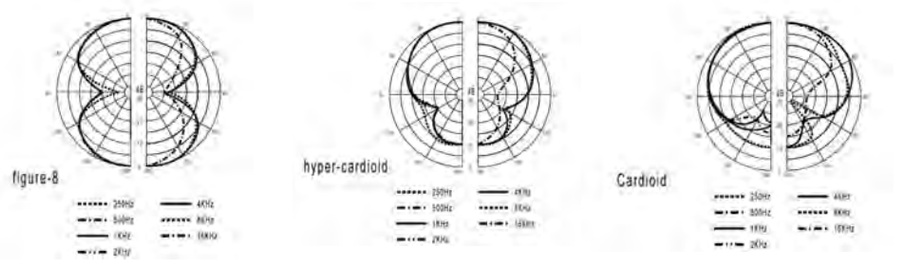
Use the “Pad” feature for high SPL signal levels, which could overload the mic’s internal circuitry, causing distortion. The “Pad” switch is found front and center of the CS1 and on the front left of the CS5. Four possible settings are available: -5dB, -10dB, -15dB and -20dB. The frequency response graph is shown below, along with the four pad levels:

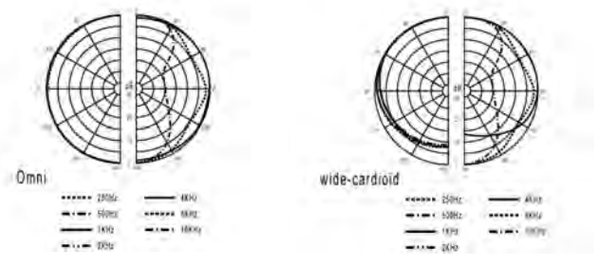


Variable Polar Patterns (CS5 Only)

The polar pattern rotary switch is located on the right front of the mic. Use the right thumbwheel on the front of the CS5 to adjust the directional characteristics of the microphone between figure of eight, hypercardioid, cardioid, wide cardioid, and omnidirectional.

Shown below are the five polar response graphs. To aid in visual clarity, four of the represented frequencies are shown only on the left side of the polar chart and three on the right. If you are unfamiliar with polar response graphs, this may look confusing at first.





• Figure of eight: Very significant attenuation of sound pickup on sides of microphone. Front and rear of microphone pick sound up equally, but 180° out of phase from one another.
• Hypercardioid (Mushroom-shaped nomenclature): Significant side attenuation through 120 degrees with a small lobe on the rear.
• Cardioid (Heart-shaped nomenclature): Some attenuation of sound occurs on sides and rear of microphone.
• Wide Cardioid (Moon-shaped nomenclature): Significant rear attenuation with little to no side attenuation.
• Omnidirectional (O-shaped nomenclature): Sound from all directions is picked up by microphone without any side or rear attenuation.

TROUBLESHOOTING TIPS

No Sound Whatsoever:
All CS-Series microphones require external voltage in order to operate. Verify that +48-volt phantom power is present.

Still No Sound:
Make sure microphone cable is XLR male to XLR female and connect only to inputs labeled “Mic In”, or “Microphone”, etc.

The Back Of My CS5 Sounds Different From The Front When Set To Figure Of Eight:
Are you monitoring with headphones while talking into the mic? If so, the back of the mic will sound strange. This is because the rear diaphragm of the microphone takes the sound of your voice and flips it 180° out of phase. Meanwhile, the lower frequency range of your voice travels in phase along your jaw line to your ears. When the out of phase signal from the headphones meets the in-phase signal from your ears, the two signals are phase cancelled. Since this effect only occurs during the conditions described above, it will not affect recordings.

Shockmount Looks As If It Should Fit On Mic Stand, But For Some Reason, It Will not Screw On:
There are two standard thread sizes for mic stands, 5/8-27 and 3/8-16. Studio Projects shock-mounts ship with a brass reducer installed, which allows for the 3/8-16 threads. For use with 5/8-27 mic stand threads, unscrew adapter from shockmount, using a small coin as a screwdriver. Keep track of adapter when not in use – you never know when you may need it…

ORIGINS AND MANUFACTURE

Studio Projects Microphones are manufactured in Beijing, China by 797 Audio to a specification defined by Studio Projects, Gardena, California. All Studio Projects microphones are inspected and tested at the factory, then inspected and tested again at PMI Audio Groups facility prior to shipping. Studio Projects microphones meet the requirements of electronic equipment sold both in the USA, Canada, and the European Union.

CS1

The Studio Projects CS1 is an externally polarized cardioid pressure gradient transducer microphone with FET impedance converter. Diaphragm material is 6µm mylar. It features four selectable pads, four high pass filters and four low pass filters. The output circuitry is active and is capable of driving long cable runs. The CS1 is useful for all manner of recording work and music style.

CS1 SPECIFICATIONS

Directional pattern:	Cardioid
Frequency range:	20 Hz-20 kHz
Sensitivity:	-32 dB
Rated impedance:	200 Ohms
Rated load impedance:	1000 Ohms
Equivalent noise level:	10 dB-A
S/N ratio:	84 dB-A
Maximum SPL for THD 1%:	134 dB
Maximum SPL or 1% with preattanuation:	154 dB with -20dB preattanuation
Maximum output voltage:	10 dBu
Current consumption:	4 mA
Diameter	52 mm
Length:	215 mm

APPLICATIONS

- Close miking of instruments with high sound pressure levels
- Announcer’s mic for broadcasting/dubbing
- Home recording and project studios
- Vocalist recording
- Spot mic for: wind instruments, strings, percussion and guitar amps.
- XY - Coincident Cardioids
- Mid-Side Method
- Stereosonic Technique (Blumlein)
- Overheads

CS5

The Studio Projects CS5 is an externally polarized five pattern pressure gradient transducer microphone with FET impedance converter. Diaphragm material is 6µm Mylar. It features four selectable pads, four high pass filters and four low pass filters, along with five directional pattern settings: Figure of eight, hypercardioid, cardioid, wide cardioid and omnidirectional. The output circuitry is active and is capable of driving long cable runs. The CS5 is useful for all manner of recording work and music styles.

CS5 SPECIFICATIONS

Directional pattern:	omnidirectional, wide angle cardioid,cardioid,hypercardioid, figure-8
Frequency range:	20 Hz-20kHz
Sensitivity:	-34 dB(cardioid)
Rated impedance:	200 Ohms
Rated load impedance:	1000 Ohms
Equivalent noise level:	13 dB-A
S/N ratio:	81 dB-A
Maximum SPL for THD 1%:	136 dB
Maximum SPL or 1% with preattanuation:	156 dB with -20dB preattanuation
Maximum output voltage:	10 dBu
Current consumption:	4 mA
Diameter	52 mm
Length:	215 mm

APPLICATIONS

- Close miking of instruments with high sound pressure levels
- Announcer's mic for broadcasting/dubbing
- Home recording and project studios
- Vocalist recording
- Spot mic for: wind instruments, strings, percussion and guitar amps.
- XY - Coincident Cardioids
- Mid-Side Method
- Stereosonic Technique (Blumlein)
- Overheads

STATEMENT OF ROHS COMPLIANCE

PMI Audio Group manufactures complete electronic products which are covered by the European Union's "Removal of Hazardous Substances" directive 2002/95/EC (RoHS). This directive seeks to eliminate toxic substances from the manufacturing process, such that when equipment is disposed of at the end of its life cycle, the materials it contains do not contaminate the environment and pose health risks. Banned substances are lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE). Lead is used together with tin in solder connections to reduce the melting point of solder. Lead-free solder requires higher soldering temperatures which in turn places greater thermal stress on components.

PMI Audio Group takes seriously its obligations under the RoHS directive and insists that its factories use only components that are certified RoHS compliant, as well as leadfree solder. In a very few cases the necessary components may not yet be available to the world market but we work continuously to eliminate any such exceptions at the earliest opportunity. Our printed Circuit Boards (PCB's) and all soldered joints have been lead-free since 2005.

STATEMENT OF WEEE POLICY

PMI Audio Group manufactures many complete electronic products which are covered by the European Union's "Waste Electric and Electronic Equipment" directive 2002/96/EC (WEEE). This directive seeks to ensure that waste electric and electronic equipment is disposed of in an environmentally responsible manner, at the end of its life cycle. PMI Audio Group takes seriously its obligations under this directive to take back WEEE-affected products and, from 13th August 2005, will mark all such products with the crossed-out wheeled bin symbol.

Business to Business products: PMI Audio Group will cost-neutrally take back WEEE-affected electric and electronic equipment in this category, from 1st January 2006. PMI Audio Group will work with disposal and recycling partners working within the EU. The waste electric and electronic equipment can then be turned over to a disposal and recycling companies in the countries concerned.

Business to Customer products: emerging electric and electronic equipment will be disposed of by local authorities' collection systems.

Dual Use products: this equipment will be disposed of by local authorities' collection systems.

IMPORTANT SAFETY INFORMATION

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO AVOID FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPARATUS TO WATER, RAIN OR MOISTURE.

This microphone has a serial number on the rear. Please record the model number and serial number and retain them for your records.

Model number _____

Serial number _____

NOTE — This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

These limits are designed to provide reasonable protection against harmful interference in a commercial/residential installation respectively. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by any combination of the following measures: (1) Relocate or reorient the receiving antenna (2) Increase the separation between the equipment and the receiver (3) Plug the equipment into an outlet on a circuit different from that to which the receiver is connected (4) Consult your dealer or experienced radio/television technician for additional assistance.

CAUTION — Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water. Do not expose to drips or splashes. Do not place any objects filled with liquids, such as vases, on the apparatus.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Do not install this apparatus in a confined space such as a book case or similar unit. Install only in racks designed for the purpose and in accordance with manufacturers' instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Apparatus designed with Class-I construction must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
16. This apparatus may be equipped with a single-pole, rockerstyle AC mains power switch. If so this switch is located on the front panel and should remain readily accessible to the user.
17. The manufacturer reserves the right to change the technical specification of the product without prior notice.

NOTES

STUDIO PROJECTS LIMITED WARRANTY

THIS PRODUCT IS FOR PROFESSIONAL USE ONLY

PMI Audio Group warrants that all products will be free from defects in material or workmanship:

A: For a period of (3) years from the date of purchase (hereinafter the labor warranty period), PMI Audio Group will repair or replace this Product if determined to be defective. After the expiration of the labor warranty period, the Purchaser must pay labor charges.

B: In addition, PMI Audio Group will supply, at no charge, replacements for defective parts for a period of (3 years) from the date of purchase. During the labor warranty period, to repair the Product, Purchaser must return the defective Product, freight prepaid, or deliver it to PMI Audio Group Service Center. The product to be repaired is to be returned in either its original carton or a similar package affording an equal degree of production. PMI Audio Group will return the repaired Product freight prepaid to the Purchaser. PMI Audio Group is not obligated to provide Purchaser with a substitute unit during the warranty period or at any time. PMI Audio does not Warranty consumables like tubes that wear from normal use.

CONDITIONS

1. Notification of claims: Warranty Service: If Purchaser discovers that the Product has proven defective in material or workmanship, then written notice with an explanation of the claim shall be given promptly by Purchaser to PMI but all claims for warranty service must be made within the warranty period. If after investigation PMI determines that the reported problem was not covered by the warranty, Purchaser shall pay PMI for the cost of investigating the problem at its then prevailing time-and-materials rate. No repair or replacement by Purchaser of any Product or part thereof shall extend the warranty period as to the entire Product. The specific warranty on the repaired part only shall be in effect for a period of ninety (90) days following the repair or replacement of that part or the remaining period of the Product warranty, whichever is greater.

2. Exclusive Remedy: Acceptance: Purchaser's exclusive remedy and PMI's sole obligation is to supply (or pay for) all labor necessary to repair any product found to be defective within the warranty period and to supply, at no extra charge, new or rebuilt replacements for defective parts. If repair or replacement fails to remedy the defect, then and only in such an event, shall PMI exchange to Purchaser a new or reconditioned unit. Purchaser's failure to make a claim as provided in paragraph 1 above or continued use of the product shall constitute an unqualified acceptance of such Product and a waiver by Purchaser of all claims thereto.

3. Exceptions to Limited warranty: PMI shall have no liability or obligation to Purchaser with respect to any Product subjected to abuse, improper use, negligence, accident, modification, failure of the end-user to follow the operating and maintenance procedures outlined in the users manual, attempted repair by non-qualified personnel, operation of the unit outside of the published environmental and electrical parameters, or if such products original identification (trademark, serial number) markings have been defaced, altered, or removed. PMI excludes from warranty coverage, Products sold AS IS and/or WITH ALL FAULTS and excludes used products which have not been sold by PMI to the Purchaser. PMI also excludes from warranty coverage consumables such as fuses and batteries, etc.

4. Proof of purchase: The dealer's dated bill of sale must be retained as evidence or the date of purchase and to establish warranty eligibility.

DISCLAIMER OF WARRANTY

EXCEPT FOR THE FORGOING WARRANTIES, PMI HEREBY DISCLAIM S AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR LIMITED, INCLUDING, BUT NOT LIMITED TO ANY/OR ALL IMPLIED WARRANTIES OF MERCHANT ABILITY, FITNESS FOR A PARTICULAR PURPOSE AND/OR ANY WARRANTY WITH REGARD TO ANY CLAIM OF INFRINGEMENT THAT MAY BE PROVED IN SECTION 2-312(3) OF THE UNIFORM COMMERCIAL CODE AND/OR IN ANY COMPARABLE STATE STATUE. PMI HEREBY DISCLAIMS ANY REPRESENTATIONS OR WARRANTY THAT THE PRODUCT IS COMPATIBLE WITH ANY COMBINATION OF NON-PMI AUDIO PRODUCTS PURCHASER MAY CHOOSE TO CONNECT TO THE PRODUCT.

LIMITATION ON LIABILITY

THE LIABILITY OF PMI, IF ANY, AND PURCHASER'S SOLE AND EXCLUSIVE REMEDY FOR DAMAGES FOR ANY CLAIM OF ANY KIND WHATSOEVER, REGARDLESS OF THE LEGAL THEORY AND WHETHER ARISING IN TORT OR CONTRACT, SHALL NOT BE GREATER THAN THE ACTUAL PURCHASE PRICE OF THE PRODUCT WITH RESPECT TO WHICH SUCH CLAIM IS MADE. IN NO EVENT SHALL PMI BE LIABLE TO PURCHASER FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION, REIMBURSEMENT OR DAMAGES ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS OR ANY OTHER REASON WHATSOEVER.

OWNERS REGISTRATION CARD

TO BE COMPLETED AT TIME OF PURCHASE

Name _____

Date of Purchase _____

Serial Number _____

Dealer's Name _____

RETAIN FOR YOUR RECORDS

PLEASE DISPATCH AND RETURN YOUR REGISTRATION TO STUDIO PROJECTS WITHIN 14 DAYS OF PURCHASE

STUDIO PROJECTS
DISTRIBUTED BY PMI AUDIO GROUP
1845 W. 169th Street
Gardena, CA 90247 USA

Place
Stamp
Here

PRODUCT REGISTRATION INFORMATION
PLEASE FILL IN THE BELOW SECTIONS AND RETURN

Name: ______________________________

Address: ______________________________

City: ______________ State: ______________ Zip Code: ______________

Telephone Number: ______________ email Address: ______________

Model Purchased: ______________ Date Purchased: ______________

Serial Number: ______________ Dealer: ______________

Comments: ______________________________

____

What magazines do you read to influence your buying decision: (please check all that apply)

- ☐ MIX
- ☐ Electronic Musician
- ☐ EQ
- ☐ Home Recording
- ☐ Pro Audio Review
- ☐ Recording
- ☐ Pro Sound News