

# FM ACOUSTICS NEWS

Volume 6, Spring 1995

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## *Music is what it's all about!*

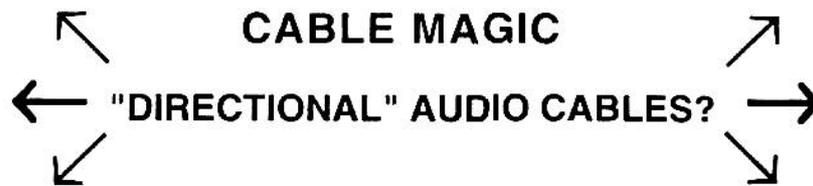
The desire to break the barrier and achieve higher accuracy in music recording *and* in music reproduction brings to life such remarkable products as the *ClassAmp*® M-1 microphone preamplifier and the phenomenal new FM 222 Phono Linearizer/Preamplifier. Not only is it now possible to achieve better recordings by using the *ClassAmp*® M-1 (see page 8 & 9) but with the new FM 222, existing LP treasures can now be reproduced in a quality never before thought possible.



FM 222

Please turn to page 4 for more information

*You've never heard it so good! The revolution in record - yes LP! -preamplification!*



It is nonsense for some cable designers, manufacturers and reviewers to claim that audio signals travel through the cables in one direction only. If that was true, loudspeaker cones would move in one direction only and never return to their original position... There would obviously be no audio signal.

Some of the cables even have directional arrows that fool clients into believing that the electrons wander in one direction and therefore the signal transfer in that direction will somehow be "better". This is nonsense! Audio signals consist of alternating current (AC), and that means the current flow - and therefore the diaphragms - always work in both directions (forward and backward), as the word itself suggests:

AC = alternating current.

### ...it's because of the long copper crystals...

Another misconception stems from the pretension that special "long copper crystals" will somehow assist the electrons, as these will then have to "cross fewer crystal barriers". Some designers have been able to get reporters and reviewers to write such statements. Nobody benefits from such outrageous claims but those that think that this is clever marketing. At best it is wishful thinking: with AC signals, the electrons only move an absolutely minimal distance: it is the "charge effect" that propagates the audio signal. The electrons in cables, in fact, stay in the same area and do not wander centimeters or meters inside the cable as some will try to make you believe.

### ...and more magic!

Some designers are now adding "magic boxes" or "terminators" to their cables, in the hope that this will somehow improve cable performance. The "magic boxes" actually contain simple filtering which introduces non-linearity, phase errors, etc... With neutral and linear audio systems, these "magic boxes" introduce colorations (non-linearity) which detracts from performance. These artificial colorations can be captivating in the first few minutes just because something in the audio system "has changed". It is after more extensive listening that the client realizes the limitations and the coloration created. Quite a few cable makers are using such artificial colorations to attract initial attention and use this first moment to get an "impulse sale".

However, non-linearity remains non-linearity and later the cables will eventually have to be changed to more accurate and neutral types.

### Obstacles

Cable designers often ignore the fact that the manufacturers of true top class preamplifier and power amplifiers try to guarantee the **lowest possible resistance** and avoid any obstacle in the signal path (and it must be remembered: in such an application resistance is always a "resistance to signal transfer"!). It is quite clear that any obstacle **added** in the signal transfer chain **reduces accuracy** and is bound to subtract from the potential performance. The solution does not lie in **added** obstacles but rather in **eliminating** every possible source of resistance, interference and other negative influences on signal transmission.

The fact that these "metal or plastic boxes" are often hermetically sealed indicates that the designers are trying to create some type of "mystique" around their "creation" rather than assuring perfect performance. The contents are not very mystical though; just a coil, sometimes some capacitors and resistors creating a simple filter; not really what is needed to achieve a linear system..

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Any obstacle **added** in the signal transfer chain  
**reduces accuracy**

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A further theory that is quite widespread is that the different frequencies in cables prefer certain thicknesses of conductors. According to this "theory", thick conductors propagate the low frequencies, mid-sized conductors handle middle frequencies, and tiny strands - or even litz wire - should be "the best" for high frequencies.

How about a separate conductor for each music note and each instrument???

It is somewhat disconcerting that such cables are put on the market but more disturbing is the fact that some magazines actually print such "bula bula".

If a cable is designed correctly - with proper attention to the task of interfacing two electronic circuits - **all** audio frequencies flow through **all** conductors and at similar speed.

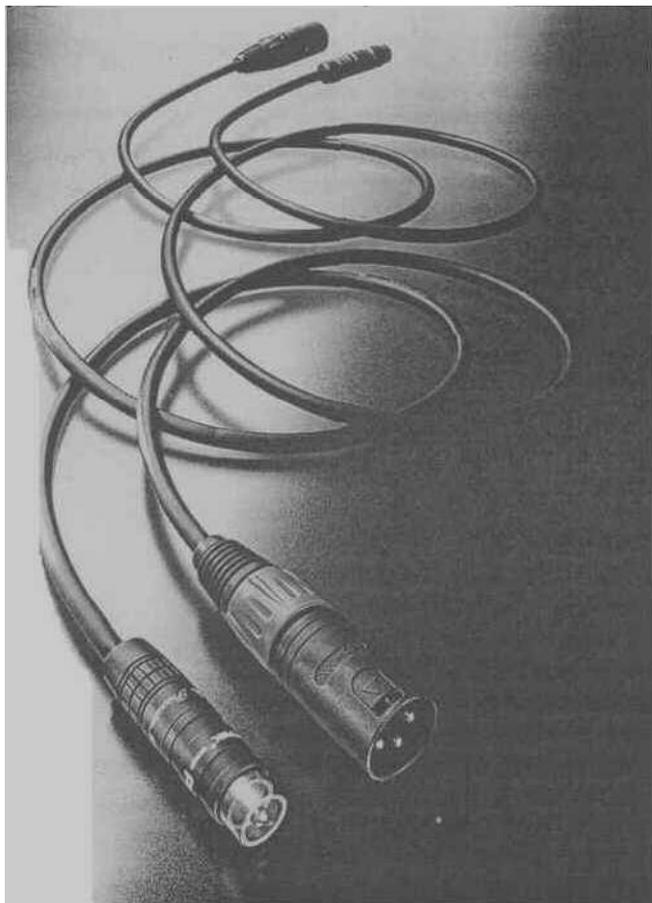
The above are just some examples that demonstrate that some cable designers do not fully understand the importance of perfect interfacing of signals. Others know well and are outrightly misleading their clients.

At FM ACOUSTICS we do not pretend to know everything better all the time nor do we want to "police" other manufacturers. However, there is a clear need to make the public aware of the most misleading statements of the "witchdoctors" in audio.

## Precision Interface Technology® CABLES

Below you will find some of the rather unusual characteristics of interconnect cables by *Precision Interface Technology* of Switzerland. No "magic" here, just extensive practical experience and a sound scientific background (plus a patented idea) that allow most precise interfacing of audio equipment.

You should only invest in something that really works. FM ACOUSTICS is therefore introducing the following



*Scientifically accurate, truly balanced Precision Interface Technology® interconnect cables solve interfacing problems optimally.*

P.I.T. cables are outstanding in a number of aspects that are of importance to achieve optimal interfacing of audio signals.

- ♪ P.I.T. cables achieve a signal-to-noise ration and interference rejection of 130dB (which is ~20-40dB higher than the next best interconnect cables!)
- ♪ Shielding to frequencies above 8>0 MHz is guaranteed.
- ♪ Interference is eliminated by 100% proper conduction to ground.
- ♪ A shield coverage of 99,9% is achieved and this even when the cable is bent.

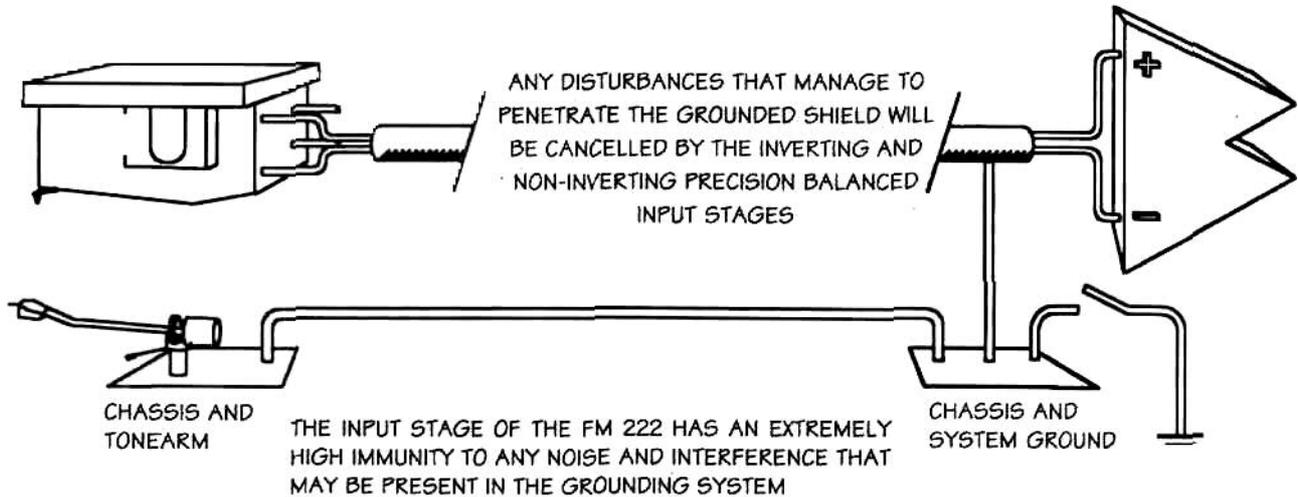
### *Special Offer :*

*Try a pair of Precision Interface Technology® cables in your home system for 30 days without obligation. In decent systems there will be a fine improvement: more transparency, neutrality and increased dynamics contrasts result in clear advantages.*

- ♪ Very high rejection of magnetically and electrically induced coupling is guaranteed.
- ♪ Unique "floating shield" designs results in massive improvements in signal transfer and immunity to interference signals.
- ♪ Lowest crosstalk is attained.
- ♪ True balanced construction allows optimal balancing of audio systems.
- ♪ Extremely low residual noise floor results in an increase in dynamic contrast and a much better signal-to-noise ratio.
- ♪ Intercable and shield/signal wire capacitance and inductance is optimized.
- ♪ Absolutely phase accurate signal transfer.
- ♪ Total elimination of time smear.
- ♪ Perfect linearity with both static and dynamic Signals.
- ♪ Elimination of skin effect throughout entire audio bandwidth.
- ♪ Signal-transfer speed 1000 times faster than needed for perfect audio reproduction.
- ♪ Preservation of time coherence even over long distances.
- ♪ All cable parameters are carefully optimized to achieve ultimate results with a variety of systems.
- ♪ Extreme cable flexibility avoids strain on chassis receptables (with correspondingly bad and/or loosened contacts).

## • Vinyl reproduction like you have **NEVER** heard

### *Resolution Series* ® 222 PHONO LINEARIZER / PREAMPLIFIER



*For the first time ever:*

***truly balanced cartridge preamplification!***

By design all phono cartridges are balanced sources. The term "balanced" describes a system in which the audio signal is transmitted via two shielded symmetrical conductors, neither of which is connected to ground.

In contrast, in an unbalanced system one of the signal paths is carried by the shield, or is exposing the signal to the ground carrier. Interference signals are picked up by the shield and in that way can enter the audio circuitry. The lower the signal level and/or the more ambient interference present, the greater is the danger of degradation allowed by an unbalanced interface.

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"The FM 222 literally revolutionizes the reproduction of LP's and 78's.

No doubt this is the biggest advance in the reproduction of vinyl in the last decades!"  
(reviewer's comment).

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When considering the ultra low signal levels coming from cartridges, it becomes clear that a true balanced interface to the preamplifier must present a major improvement over all presently available designs. Unfortunately, such an elegant system was always faced with a number of technical problems. In the FM 222, these limitations have now been entirely overcome.

The FM 222 is the **only** MC preamplifier which allows **true balanced** interconnection of cartridges. Such balanced interconnection has major advantages amongst them:

- ♪ increased dynamics & headroom
- ♪ elimination of non-musical signals (interference)
- ♪ astoundingly lower hum and noise
- ♪ more accurate signal transmission
- ♪ larger dynamic contrasts
- ♪ improved intertransient silence

In the FM 222 the signal lines from the cartridge are connected directly to each of the true balanced input stages. They have no connection to the shield whatsoever. Thus, the shield can function optimally, conducting all interference signals directly to ground\*\*. Furthermore, the ground must of course be separate from the electrical ground in the audio circuits (in many so-called "balanced" products this is not the case).

*(More detailed information on balancing is available in Technical Bulletin No. 34).*

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\* **Page 5:** *Contrary to what is sometimes believed, impedance matching does **not** mean that the load impedance should be the same as the source impedance. In the case of a cartridge the load impedance must be considerably higher than the internal cartridge impedance.*

\*\* *Of course, only cables that allow **true balanced** interconnection can guarantee balanced interface. Most so called "balanced" cables are **not** sufficiently symmetrical and do **not** allow true balanced interfacing!*

## CARTRIDGE LOADING

In Phono preamplification **all** aspects require careful consideration. Cartridge loading has a considerable influence on reproduction.

Negative effects on the performance will occur if there is non-optimal impedance matching between a cartridge and the input stage of the preamplifier circuit (the interconnect cable and the connectors are not to be neglected parts of this interface!)\*. With the FM 222 it is now for the first time possible to optimally fine tune cartridge performance.

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### Records gain an entirely new life ...

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Preamplifiers having just fixed input resistances and no variable loading are unable to extract the full performance from any MM or MC cartridge. Despite that, most preamplifiers lack the all important feature of adjustable cartridge loading. This is one of the reasons why many preamplifiers work acceptably with one or two cartridges but do not provide satisfactory performance with other cartridges. The listener is at the mercy of the fixed input loading of the preamplifier. The interface cannot be optimized and therefore the performance is compromised.

The FM 222 provides the ultimate solution: it features DIP switches and plug-in modules for fine tuning.

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One of the FM 222's unique features is the possibility to fine tune the cartridge loading for optimal results with **any** cartridge.

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Thanks to (with) the plug-in module concept, an unlimited number of combinations are possible; this for MC **and** for MM cartridges. One can optimize the loading for any cartridge ever made (or that will ever be made).

## NORMAL / VERTICAL OPERATION

A special feature which guarantees utmost reproduction with monaural LP's that were cut vertically rather than laterally is the "Vertical" switch. When in it's "Norm" position this switch optimizes the lateral information content of the signal. However some mono discs were cut vertically, so-called "hill and dale records". With existing preamplifiers (and being honest we must include the FM ACOUSTICS FM 244 here) these records could never really be played back satisfactorily. With a flick of the "Vertical" switch, the FM 222 allows optimal reproduction of "hill and dale" records. **The result: more music, less noise.**

## UNIQUE VARIABLE DE-EMPHASIS

For music lovers, the *performance* is every bit as important as the *sound* of a record. Many great performances are only available on LP's or on 78 RPM discs. With today's equipment, many of these LP's and 78's are, in fact, replayed wrongly and their sound leaves something to be desired. Many a re-issue suffers from similar problems. One of the reasons is that practically all preamplifiers are limited to only replay the RIAA de-emphasis curve.

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Whatever the type of cutting process, the FM 222 can extract the optimum.

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With the variable RIAA de-emphasis of the FM 222 it is now possible to accurately play back all important LP's and 78's. When accurate equalization and true balanced Class A amplification are combined, it is possible to extract an absolutely astounding amount of information from record grooves.

With the variable de-emphasis of the FM 222 it is now possible to compensate for such errors by calibrating to the accurate de-emphasis curve. This feature will revive some records that previously sounded dull and lifeless, providing a wonderful musical experience. It is not just the harmonic content that is reproduced more realistically: the positive effect on depth and width information as well as on the transparency is captivating. While some of the older LP's have surface noise, by far not all of them do. Some of them are recorded superbly; some include stellar performances. There are many treasures to be uncovered for the first time.

It is really amazing how much the sound of records is improved with the FM 222. Once this has been experienced, one realizes that none of the existing preamplifiers are capable of retrieving the full information which is embedded in the record grooves (nor can equalizers provide correct reproduction).

The FM 222 Linearizer/Record preamplifier provides an entirely new dimension in the reproduction standard of vinyl records. It is clearly the culmination of preamplifier design. With its fine tuning possibilities, far more information from record grooves can be extracted than ever thought possible. With the FM 222 one can for the first time **truthfully** replay **all** treasures of vinyl. The proprietary true balanced enhanced Class A circuits allow a listening experience that is breathtaking. True, its price achieves new levels in phono preamplification but so does the standard of vinyl reproduction.

## NOT ALWAYS IS ADDING A STAGE DETRIMENTAL...

It has repeatedly been experienced that when using the **balanced** outputs of some equipment (e.g. preamplifiers and D/A converters) the sound is not as satisfactory as when using the unbalanced outputs. Why is that so? What can be done when one desires to run the system in true balanced mode?

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Often the "balanced" signal is derived by simply adding a primitive phase inverter to the unbalanced output.

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For those who would like an optimal balanced signal interface, the ultimate solution can now be offered! By **adding** an FM 214 PRECISION BALANCED LINE DRIVER to the *unbalanced* output of the source the performance can be - often dramatically - improved.

The reason behind this is the fact that most so-called "balanced" circuits are not truly balanced at all! Often the "balanced" signal is derived by simply adding a primitive phase inverter to the unbalanced output. Half of the signal is then no longer referred to ground but modulated by the inverting amplifier, making the so-called "balanced" outputs perform much worse than the "unbalanced" outputs! Technical Bulletin No. 34 explains some reasons for this in more details.

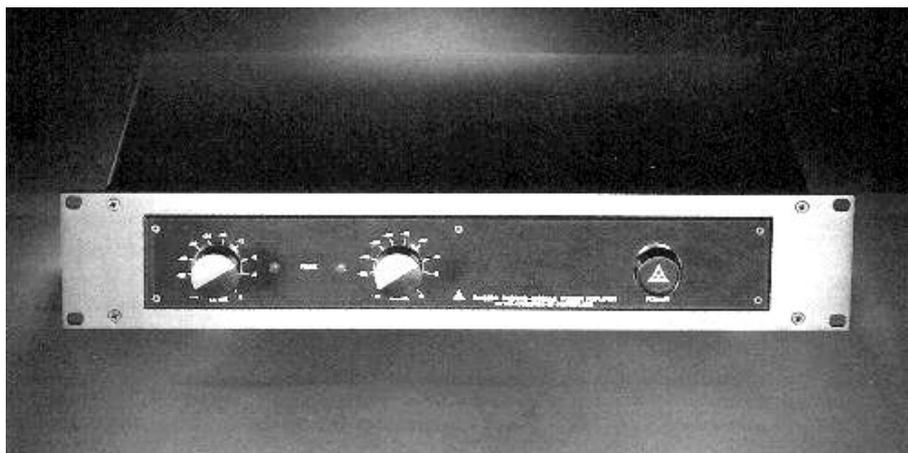
The FM 214 also provides much better drive capability than the existing buffer circuitry - whatever the type and make. Coupled with absolute stability, pristine high level signal transfer (up to +28dBu = 55 VPP!) is now possible and this over hundreds of meters and even with high capacitance/inductance loads! With any unbalanced or balanced source the system's performance can be cleverly improved by simply **adding** an inexpensive FM 214 (it costs less than CHF 2000.-)!

## UPGRADING THE FM 240 & 244

**A rare occasion:** For a change FM ACOUSTICS can offer an upgrade. A considerable improvement is possible in the FM 244 Version A, B & C by replacing the HL-19005 module with the new HL-19205 module. The modification is also possible within the FM 240; by simply replacing the corresponding "IMPW 2" or "19005" module a considerable improvement in dynamics and high-frequency resolution is attained. The cost of the module upgrade including modification work is CHF. 1'500.-. The actual module replacement should not take more than 30 minutes.

## EXCITING NEWS FOR "QUAD" USERS

"Recently I have used with great success the Resolution Series 222 Phono Linearizer/Preamplifier. In my Hi-Fi systems I use "Quad"\* ESL 63 loudspeakers that are supported in ARCICI stands. The "Quad" loudspeakers have distinctive characteristics that are thrilling music lovers. They also have a few points that did not seem to allow optimal reproduction of every music style. In addition certain limitations in dynamic reproduction are often mentioned. However, I was truly



*Perfect/or the "Quads": the FM 300A Power Amplifier*

astonished that the problems and defaults that have always been attributed to the speakers suddenly disappeared when connecting the FM 300A Power Amplifier. There is no more drive limitations and the usual switch off protection when driving high levels has simply disappeared. Suddenly, I can play anything from piano solo to very hard rock & roll and they now reproduce dynamics and attacks I have never heard before. The FM ACOUSTICS 300A Amplifier lifts these speakers to new heights in reproduction capability. If somebody had told me that this was possible by merely changing the power amplifier,

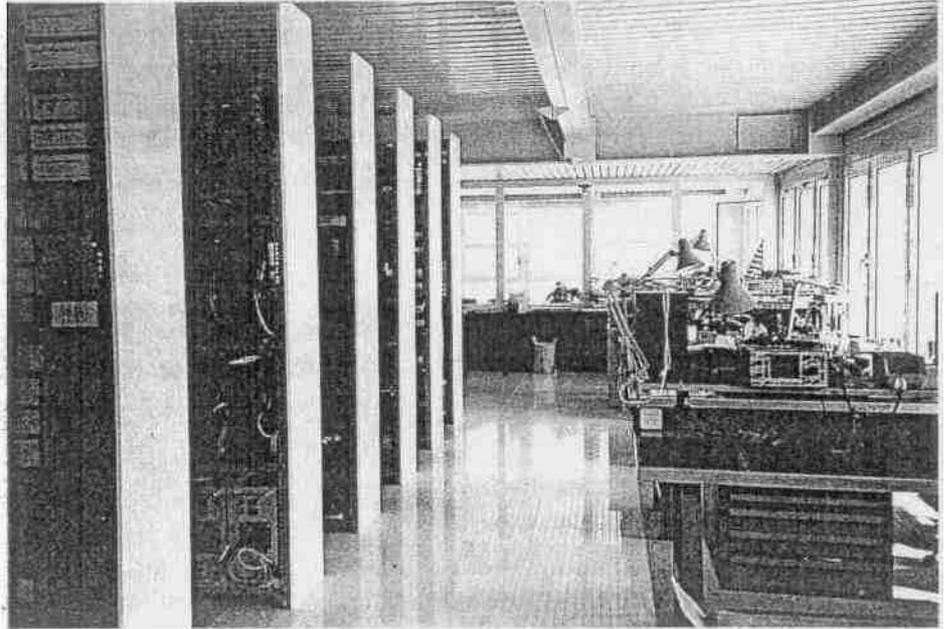
I would have never believed it. This amplifier makes the limitations of the speaker disappear. After this experience I recommend to try this fantastic combination to anybody who owns "Quad" loudspeakers."

*Juerg Schopper, Schopper AG, Winterthur, Switzerland.*

\* "Quad" is a registered trademark of the "Acoustical Manufacturing Company Ltd.", England.

## PRODUCTION ROOM

To guarantee efficient, disturbance-free production, it is vital to keep the production room clean and quiet. Working conditions exert a major influence on the product's quality standards. At FM ACOUSTICS quality is priority No. 1: no expenses are spared and as quality starts with the motivation and care of the staff their well-being is of high importance. This necessitates a comfortable work atmosphere; one where the absence of undo pressure is combined with positive attitudes and relaxed (but not lazy) working conditions. This was one of the reasons why we selected our current location in a non-industrial area on the shores of Lake Zurich.



*A stimulating atmosphere: FM ACOUSTICS location on the shores of lake Zurich*

To guarantee optimal quality standards, there is absolutely no time pressure. Each craftsman/-woman works at his/her own pace which is the basis for the unequalled product quality. Freedom from time pressure also enhances employee's long-term loyalty to the company and increases motivation to give "the best".

## BALANCED, TRULY BALANCED!

**Not everything that has two signal lines, a shield and XLR connectors is truly balanced.**

FM ACOUSTICS true balanced input and output circuits are raising quite a few eyebrows. Such accuracy in balancing of electronic circuits has never before been achieved. To make the units compatible with professional equipment (and because of connector quality), XLR type connectors are used. These connectors have 3 pins and are of a locking type. Soon after FM ACOUSTICS introduced these connectors in the domestic product range they found their way onto the backpanels of other audiophile makes. However, an XLR connector is no guarantee at all that the circuitry is balanced! The deciding factor is the circuitry **behind** these XLR connectors. More and more products are appearing that claim to have balanced inputs and outputs. Take such information with a grain of salt, because what some manufacturers call "balanced" is far from a symmetrical true balanced circuitry. Remember: good *unbalanced* circuitry is definitely better than mediocre *balanced* circuitry. If you insist on balanced circuitry ask the manufacturer for a **guaranteed** (most of these specifications are "typical" and **not** guaranteed!) specification of the CMRR (Common Mode Rejection Ratio).

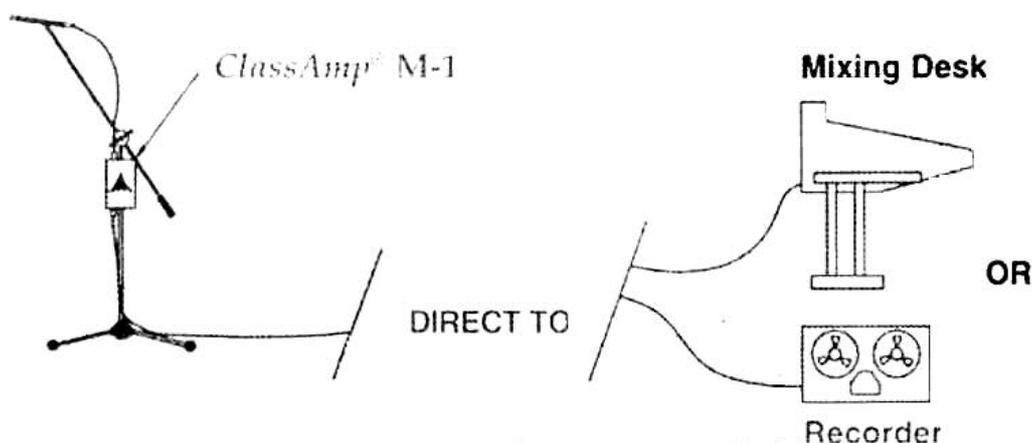
The Common Mode Rejection Ratio is the specification that defines the accuracy of balancing. Many so-called "balanced" circuits have a CMRR of as low as 40 - 60 dB which in addition varies strongly over the audio frequency range. Truly balanced circuitry must achieve a minimum CMRR of at least 80 dB over the full frequency range.

FM ACOUSTICS guarantees their products to have a CMRR better than 90 dB and even 100 dB. Typical values are 115 dB! This is what will allow **true** balanced interconnection of a system.

**Important:** When connecting true balanced equipment it will only remain truly balanced if the interconnect cables are truly balanced as well. Over 95% of the cables that are sold as "balanced" are not truly balanced. Such cables will lower the CMRR of the electronics in turn reducing the accuracy of balancing. Others are wrongly wired and some even will create ground loops! A **true** balanced cable is a deciding factor for a balanced system. Do not compromise here.

See Technical Bulletin No. 31 for more details.

## GET CLOSE TO THE MUSIC!



*Precision microphone preamplification using the  
ClassAmp M-1*

If you want to capture the important details that separate excellent recordings from the mediocre, the best way is to amplify the mic signal right next to the microphone. Precise amplification, proper balancing and multiple buffering is all done inside the *ClassAmp*® M-1. The signal can then be sent through literally hundreds of meters of cable without losses or changes in performance. The result is much more accuracy and musicality, especially with critical sources such as e.g. acoustic instruments and voices.

## TOM JUNG

of DMP was kind enough to send us further notes on the microphone selection on his recent recordings:

DIAL & OATTS play Cole Porter

Alto tenor and soprano saxophones: *ClassAmp*® M-1 with Sony 800 tube and Beyer M-380; acoustic bass Beyer M-380 through *ClassAmp*® M-1.

FANTASY BAND:

Alto and tenor saxophones: *ClassAmp*® M-1 with Telefunken 251 tube and Neumann U-47; acoustic guitar: *ClassAmp*® M-1 with custom Shure SM-81.

ROBERT HOHNER PERCUSSION ENSEMBLE :

2 *ClassAmp*® M-1's with Neumann TLM-50's.

JOE MORELLO:

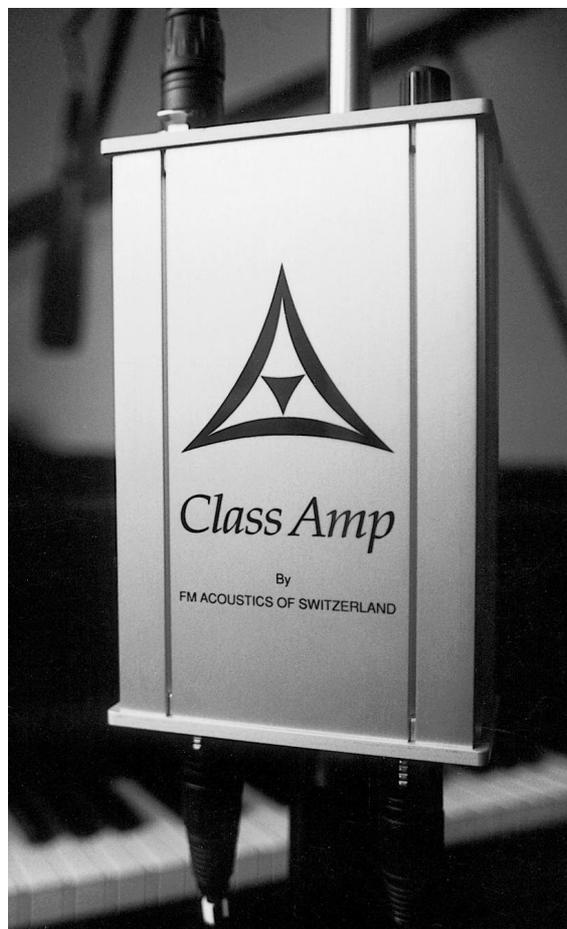
GOING PLACES:

Tenor saxophone and flute; *ClassAmp*® M-1 with Telefunken 251 tube and Neumann U-47; acoustic bass: Beyer M-380 & EV-RE27.

One of Tom Jung's latest projects was with the Mann Brothers. He reports:

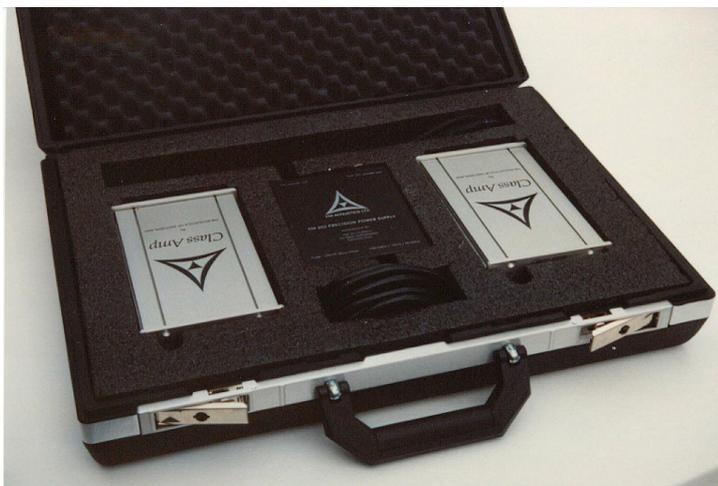
"We finished the Mann Bros. project with the "Tower of Power" horns, it came out great.

When just completed the recording on the Bob Mintzer Big Band, using the *ClassAmp*® on the entire Horn section, (4 Trumpets, 4 Trombones, and 5 Saxophones). I used the Spieden SF-15 Stereo Ribbon microphones."  
Tom Jung DMP Inc , Stamford, CT



*Photograph courtesy of Gene Michalski*

## TRAVEL LIGHT WITH THE PRODUCER'S SET!



2 ClassAmp® M-1's & clamps for clipping them to microphone stands & 1 FM 202 power supply & 1 ACC 22083 power supply cable come in a handy lockable flight case. All of this for the price of a good flute!

### ClassAmp® M-1 AT CONDULMER

Condulmer Recording Studio in Zerman di Mogliano, near Venice, Italy, famous for its unique atmosphere (it is next to a Venetian count's estate steeped in culture and history) has been using the ClassAmp® M-1 microphone/transducer preamplifier extensively in its recent productions. One of the recording projects was an album by the group PILGRIM. The ClassAmp® M-1 was used on the lead vocal tracks (with an AKG 414 microphone) and on backing vocals (with Neumann U87 microphones). Furthermore the ClassAmp® M-1 amplified Ovation 6 and 12 string guitars and was also employed for preamplification of the bass guitar (in this case acting as an ultra-precision DI box). Another of Condulmer's recent projects was a recording by Sabrina Salerno, where the ClassAmp® M-1 was used for capturing her vocals.

Sandro Franchin, producer and chief engineer at Condulmer Studios, had the following comment on the ClassAmp® M-1:

*"We found the ClassAmp® is extremely reliable and superbly suitable for every situation in which we employed it. I now realize the vast and noticeable difference between it and other microphone preamplifiers. After experiencing the ClassAmp®, it is hard to imagine getting along without it."*

*Sandro Franchin, producer, Condulmer Studios, Italy*

## QUESTIONS ON THE ClassAmp® M-1

*"Why is there no remote gain control?"*

*The fact that all currently existing methods of remote gain control negatively influence the audio signal prevents us from using such remote control circuitry. An efficient solution is used in the ClassAmp® M-1: allowing a tremendous headroom reserve (signals of up to +26 dBv can be accommodated at the input!!!) clipping is avoided.*

*The initial hesitation of users ("we'll have to run into the studio all the time to adjust the gain") quickly vanishes after a few sessions. "I set the gain of the ClassAmp® to a reasonable level and start to work. With their headroom I never run into clipping problems. They just keep performing optimally".*

*"The ClassAmp® is not cheap. If a lot of microphones are used it can become an expensive solution."*

*Nothing about the ClassAmp® is cheap. The technology used in the ClassAmp® M-1 is far advanced, reaching a level that is a clear step ahead of the rest. With the extreme care that is required during selection, manufacturing and fine tuning it just cannot be made cheap. In an actual recording situation some microphones will be less critical than others. What is done in practice is that the ClassAmp® M-1 is used for the critical "main" microphones, while other less important microphones are preamplified with the existing equipment. This way one receives optimum performance within a limited budget. A couple of good recordings done this way will easily pay for a few ClassAmp® s.*

### ClassAmp® CLONES

Imitation is the nicest form of flattery. The principle of locating the microphone preamplifier close to the mic makes a lot of sense. It comes as no surprise that some other manufacturers try to copy some ClassAmp® features. By claiming similar features as the original, manufacturers try to lead the user into believing their product will provide similar performance as the ClassAmp® M-1. However, the differences are obvious, too obvious to be neglected. All units investigated contain compromises that are less than satisfactory. Essential qualities of the ClassAmp® M-1 are lacking and differences are quite audible.

It is always a good idea to closely investigate the performance, execution and quality of copies before investing in the cheaper unit and later have to realize it was the wrong investment.

## DYNAMIC DAMPING

What exactly is dynamic damping?'

Imagine, for instance, a signal such as that created by a bass drum. To control the speaker optimally, the amplifier must control the voice coil/diaphragm assembly very tightly so that the cone assembly does not overshoot or ring once the input signal has stopped. This process of controlling the diaphragm is called damping.

Why is it then that some amplifiers having an advertised damping factor of 2000 or even higher actually provide **worse** dampening to the loudspeaker than amplifiers having a measured damping factor of 200?

The reason for this is usually not explained: the measuring method used is not realistic. The damping factor of an amplifier is usually measured at one frequency only but it actually varies considerably over the frequency range. Furthermore, the usual damping factor measurement is performed at the level of only 1 Watt with static signals (not music!!!).

These measurements are, furthermore, done with dummy loads, typically an 8 Ohm resistor, rather than with the real load: loudspeakers. Of course, such measurement procedures are unrealistic:

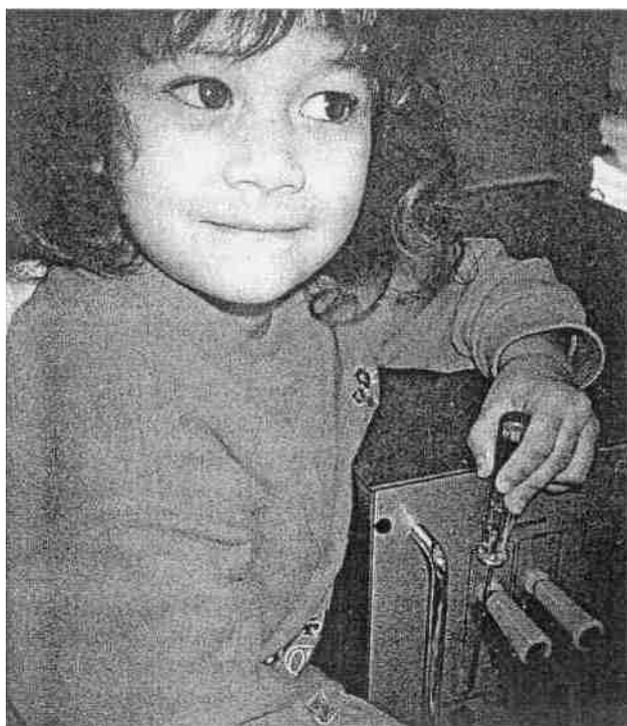
- a) when reproducing music at realistic levels most loudspeakers require quite a bit more than 1 Watt from the amplifier.
- b) with above measurements it is easy to arrive at a high number for the damping factor: simply increase the feedback of the amplifier and the damping factor reading will increase as well...\* This, however, is just a trick to get large damping factor numbers; these **numbers** do *not* correspond to how the amplifier will dampen the driver when replaying music. It is a meaningless number.
- c) for analyzes to have any resemblance to reality, one should use speakers as a load rather than resistors and music as the signal rather than static sine waves. Then the effect that the amplifier has on the dynamic performance of the speaker can be analyzed more realistically. Unfortunately, no other manufacturer does it this - realistic - way.

Music just does not consist of single frequencies nor static sine or square waves but rather is composed of an entire range of frequencies from around 16 Hz to ca. 25 KHz (through bone conduction actually higher). All of these notes vary continuously in intensity, composition and colour.

Furthermore, one is **not** listening to dummy loads such as resistors; one is listening to loudspeakers that

have dynamically changing reactance and inductance which quite dramatically change the load that the amplifier sees giving totally different results. This means that the existing damping factor and other measurements obtained with similar measuring methods are **not** meaningful and do **not** correspond to what we hear. What would be more realistic would be a way to measure or define the "dynamic" behaviour of the amplifier, in this case the "dynamic damping". There is no established measuring criteria for this, but in principle, this should indicate the amplifier's capability to provide damping to a real world load, a loudspeaker. For meaningful results the source must always be a musical signal and the load an actual speaker (or more meaningful: a variety of speakers). Entirely different results are then obtained.

## SHORT CIRCUIT!



*A test that not many amplifiers survive: Rosalina Huber presenting the short-circuit protection of the FM 811 to a captivated audience at the Stereophile show in Miami. Here she uses a screwdriver to short circuit the outputs, then removes it and 10 seconds later the amplifier resets automatically and plays as perfectly as before. Do not try this with other amplifiers though...*

A short circuit on an amplifier's output often results in serious damage, hassle and cost. In other units the protection circuitry severely affects the sound quality. It does not have to be this way. In the *Resolution Series*<sup>9</sup> FM ACOUSTICS pioneered the most effective short circuit protection ever invented. It works fully automatically and is totally separate from the audio circuitry having no possibility to negatively influence audio reproduction in any way.

If a short is present the amplifier instantly switches off, flashes the mains light and lights the "Short Circuit" indicator on the frontpanel. As soon as the short is removed the amplifier resets automatically. Further explanations will follow in a future issue of NEWS.

## AUDIO QUALITY IN POST PRODUCTION

### *Manuel Huber reports:*

Visiting a brand new Cinema in a large new movie complex I was absolutely appalled of the sound quality. I am not asking concert sound quality in a movie theatre but this was simply unacceptable: a harsh, brittle, aggressive sound that **really** hurt the ears; just unbearable. At the same time it was far from loud or even dynamic! I protected my ears and waited a few minutes to give the operator time to adjust the system. Others in the audience began complaining as well so when nothing changed, I went up and talked to the operator. His explanation: "Sorry, I can't do anything. It's not the sound system; it is this way on the track. When the advertising section is finished, it will get better". Protecting our ears, we endured the ad section. Between the different advertisements there were some minor sonic differences, but not on a single one of them was the sound track acceptable.

### **What does this experience tell us?**

It is one more proof of what FM ACOUSTICS has been advocating for a long time: lack of accurate monitoring leads to unpredictable sonic results. This in return can alienate audiences, the opposite of the producer's intention.

To be effective, advertising should impress (not disturb!) people visually **and** sonically.

Advertising jingles and PR material are often not recorded or mixed in music studios having decent monitoring. In post production rooms it is not unusual to find quite inexpensive and inaccurate amplifiers and monitors (often too small). The system's limitations leaves the operator/engineer uncertain about the sound that is on the tape or disc. He may be trying his best but his capabilities are limited by the mediocre monitoring system.

This shows that there is still a lot to be done in regards to audio quality in post production suites and jingle houses. The ironic part is that this is the side of the audio-video industry that probably has the largest budget for equipment, the audio equipment of the installation being a small fraction of the cost of the video equipment. By investing a few percent more in high quality monitoring, the studios could make sure that sonically optimal results can be achieved.

## THE AMAZING *Resolution Series*® 811

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"We did not believe our eyes! At 230V the FM 811 took repetitive peak currents of 28A from the mains and this as seen on a slow VU type meter."

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During a recent demonstration in Germany, a *Resolution Series*® FM 811 was used to power large 4-way loudspeakers. The sound quality far surpassed that of any other amplifier tested. There was simply no other amplifier that could linearly drive this speaker which admittedly presents a somewhat difficult load. Interesting was the comment received:

*"We had always been somewhat skeptical about FM ACOUSTICS' claim that the FM 811 can take up to | 10A continuous and 50A peak current from a 230 V mains. This nice installation had VU style Ampere meters. We could hardly believe our eyes when these slow meters indicated repetitive currents of 28A from the 230V mains (equivalent to 6440 VA). The peak currents must have been in the 100's of A. Again and again everyone is astound which qualities are hidden in this musical powerhouse."*

## WORLDWIDE AVAILABILITY

FM ACOUSTICS ships direct from the Horgen factory in Switzerland to the doors of our distributors, representatives or clients in over 30 countries. Our export department has 21 years of experience in handling even the most special cases. Wherever you live, we will find a safe way to provide you with the FM ACOUSTICS products of your choice. Contact our export staff. They will be glad to assist you in solving any special requirement."

## REMEMBER TO CLEAN THE FAN FILTERS!

This is of highest importance in professional environments such as recording studios, concert hall installations, etc., where the cleaning of the fan filter is recommended every 4 weeks. But this is not the only application where regular cleaning is required. Dust particles are also present at home and if an amplifier runs a couple of hours a day, it will clearly show signs of a dirty fan filter after 1-2 months. It is important to perform this very easy maintenance on a regular basis. In fact this is the only "preventive maintenance" required. By cleaning the filters regularly you will guarantee top performance of your amplifier for many years to come.

## CONVENTIONS & EXHIBITIONS

After presenting the FM 222 at the CES show in January in Las Vegas, introducing the FM 2001A at the Paris AES convention in February FM ACOUSTICS - in cooperation with IAD France - will present the *Classic* and the *Resolution Series* in the 110m<sup>2</sup> Penthouse suite in the Concord Lafayette Hotel, the location of the Festival du Son in Paris. In April there are plans for the Stereophile show in Los Angeles. While it is impossible to be at every show we make an effort to be present at most of the major shows around the world.

## NEW LITERATURE

- ♪ Reprint of report in the Italian magazine "Audio Review" on the *Resolution Series*\* 811
- ♪ Translation of above
- ♪ Article on Phono reproduction and remastering in Audio

The prestigious  
*Component of the  
Year Award*

goes to

**FM ACOUSTICS LTD.**

It has just been advised that the coveted Component of the Year (C.O.T.Y.) award of the critical listening panel of Stereo Sound Japan has been presented to FM ACOUSTICS *Resolution Series*®.

Further details will be in FM ACOUSTICS NEWS No 7.

## TWENTY (20) YEARS OF FM 800A!



*"The most romantic power amplifier." An early version (1977) of an FM 800A.*

20 years have gone since the FM 800A was introduced and it is still available! This is a nice example that the concept of thinking ahead, the faithfulness and the care we dedicate to our products pays off well for all! The FM 800A shows what a long term philosophy can achieve; the FM 800A - termed as the most "romantic" of FM ACOUSTICS power amplifiers - still provides more music than the other makes. This may be a reason why the value of well kept second hand FM 800A's is rising! Pristine FM 800's have been reported to fetch up to 200% of their original list price! A very rare occurrence with audio equipment and a good example of how an FM ACOUSTICS product keeps its value. Before you invest in an amplifier you should hear this marvel.

## DELIVERY SITUATION REQUIRES PATIENCE

Presently the delivery situation at FM ACOUSTICS requires some patience as during the last six months we have seen a steady increase in orders.

While FM ACOUSTICS is famous for on-time delivery, when our stock has been depleted it is impossible to raise production quickly. Reasons for this are the time-consuming electronic and listening selection as well as test procedures which are required before production can even start, careful hand-soldering and multiple testing of all parts and semi-assemblies. The current situation therefore requires some patience from clients who have products on order.

Depending on product type, the delivery terms range from 3 weeks to 22 weeks. Please understand that we simply cannot speed up production as this would undoubtedly result in a negative effect on long time quality. Please bear with us. You will be rewarded by a product that stands the test of time and is a once in a life-time investment.



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