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Important Safety Instructions

This product shall be connected to a MAINS socket outlet with a protective earthing connection.

Weighs 55kg (120 lbs.) per unit. Shipping weight- 85kg (187 lbs.). Never lift the amplifier by yourself.

Always use two people to unpack or move the amplifier. Always bend at the knees when lifting. Do not strain your back.

Designed for indoor use only, the dm range of amplifiers are not protected against liquids. They should not be exposed to dripping or splashing and no objects filled with liquids, such as vases, should be placed on them.

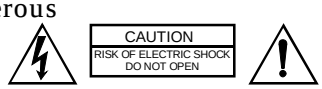
The dm38 is produced in two models designed to operate on different main power supplies.

110V model (Halcro item 411-005): 100 - 120V, 45-65Hz
240V model (Halcro item 411-006): 220- 240V, 45-65Hz

The Amplifier's Positive Loudspeaker Terminal can generate Hazardous Live Voltages. To comply with International Safety Standards only use Loudspeaker cables with well insulated terminals such as WBT-0660. Always switch the amplifiers to Stand By or OFF before touching these terminals or adjusting loudspeaker connections.

Never obstruct the airflow to the heatsinks.

Contains no user serviceable parts. Do not attempt to open any of the amplifier compartments, as this may expose you to dangerous voltages and will void the warranty.



All compartments are sealed at the factory. If the seals are broken, the warranty will be void and all service costs will be charged to the owner.

Requires F 10A L 250V fuse (if operating on 220 – 240V) or
F 15A L 110V fuse (if operating on 100 – 120V) for continued protection against the risk of fire. Never bypass or use any other type of fuse. The fuse is located on the bottom of the amplifier, near the master ON / OFF switch.

Warning do not use any cables longer than 3M

Introduction

Congratulations on purchasing the HALCRO™ dm38 Stereo amplifier.

HALCRO™ designs and manufactures the only "Super Fidelity" amplifiers in the world. This "Super Fidelity" amplifier reproduces with better than 99.9997% purity of all tones across the entire audio range.

The concept behind the electronic design was to create an amplifier, which did not color the sound with its own electronic characteristics. i.e. recreate the original sound as it was at the time of recording.

Please enjoy the HALCRO™ audio experience.

HALCRO™ has enjoyed creating perfect audio reproduction for the world's music connoisseurs.

If you desire to contact HALCRO™ to give us feedback on your purchase or for general enquiries;

please feel free to:

email us at admin@halcro.com
or phone + 61 8 8238 0807
or fax + 61 8 8238 0852

Installation

Ensure you have read the Important Safety Instructions section on page 2, prior to installing your HALCRO™ amplifier.

If you require assistance in the unpacking and installation of your HALCRO™ amplifier, please contact your dealer.

PLEASE NOTE:

When lifting the unit, always use two people.

The unit must be lifted by placing your hands under the middle of the bottom compartment. Do not lift the unit under the top compartment.

Unpacking

1. Unscrew the 4 knurled knobs at the base of each box. Then remove the upper part of the container by lifting directly upwards, till it clears the top of the amplifier.
2. With an assistant, remove the plastic wrapping and foam pieces, then lift the amplifier from the base of the container. Remove the plastic covering from the unit. Please save it for later use.
3. Move the unit to its final location (see Positioning). White cotton gloves have been provided to prevent marking the amplifier while moving it in to place.

Important

- Do not connect any cables as yet.
- Safely store the packaging so it may be used for future relocation of the unit, and for shipping if service is required.

Positioning

We suggest that the dm38 be positioned as near to your loudspeakers as practical. This will reduce the length of the loudspeaker cable required. The sides of the unit house the heatsinks that are used to dissipate heat. The airflow to these should not be interrupted. Ensure there is at least 12 inches (300mm) clearance around the unit.

Connections

Connecting the Mains Supply Cable

Plug the mains plug into the unit's socket, which is positioned, at the rear, on the base of the bottom compartment, which houses the power supply. Ensure the cable exits to the rear of the unit. Do not plug into the mains outlet.

Connecting the Loudspeakers

The dm38 has 4 loudspeaker terminals:
- 2 x Positive + (Red Bezel).
- 2 x Negative - (Black Bezel).

All of the pure copper connections are finished with the highest-grade gold plating.

- Ensure the positive terminal of the amplifier connects to the positive terminal of the loudspeaker. This will ensure correct phasing of the audio signal.
- The loudspeaker terminals will accept spade or hook terminals. Only fully insulated terminal are to be used.
- Ensure the loudspeaker terminals are securely tightened. Do not over tighten or you may damage the terminals.
- When connecting loudspeaker cables always ensure the conductive surfaces are not touching each other. DO NOT SHORT-CIRCUIT THE TERMINALS.

There maybe high voltages present at the loudspeaker terminals, which can be hazardous if touched. Always ensure the unit is switched to OFF or STANDBY mode when connecting or disconnecting loudspeakers.

PRIOR TO TURNING ON THE UNIT, PLEASE CONTINUE TO READ THE FOLLOWING PAGES.

Connecting the External Ground

The dm38 is equipped with a separate ground terminal. The ground terminal has a green bezel and is located under the power supply. This terminal may be used to reduce hum and ripple in some circumstances.

Bridging

You may bridge the HALCRO™ amplifier, for details please email us at service@halcro.com

A bridging kit is available through HALCRO™.

Running-in period

The dm38's electronic running-in period is completed at the factory. A further running-in period is not required.

dm38 Input Selections

The dm38 has three switch selectable inputs, each having a separate input socket. Both the input sockets and switch are mounted on the top rear panel.

Input Styles	Required output source impedance	Input socket	Input impedance
Balanced voltage input	Low impedance. e.g., standard preamplifier or CD player etc.	XLR	10kohms + 10kohms
Un-balanced voltage input	Low impedance. e.g., standard preamplifier or CD player etc.	RCA	10kohms
Current-mode input	Very high: "infinite."	RCA	60ohms

Comments on the different dm38 inputs

The balanced voltage input or current-mode inputs are most desirable for minimizing earth loop generated mains hum and ripple, or high frequency interference.

Sources with current-mode outputs are rare and are most likely to have an RCA output socket. The advantages of this source are that:

- Earth loop generated mains hum and ripple are minimized.
- Cable, plug and socket generated interference is minimized (from poor connections which may be affected by sound vibration for example).

The unbalanced input is quite satisfactory so long as earth loop generated mains hum and ripple is not a problem.

All or some of the input sockets may have active sources simultaneously connected to them. The selector switch selects the input to be amplified.

Operating Instructions

- Once the external cables are connected to the unit, ensure the master ON/OFF switch is in the OFF position. (The master ON/OFF switch is situated on the base of the lower compartment, near the mains socket on the unit. You will have to kneel on the floor at the back of the unit to access the switch).
- Plug the mains plug into a mains outlet.
- Switch the master ON/OFF switch to ON. The LEDs on the front and rear of the amplifier will glow red. This indicates that the unit is in standby mode. In this mode a small current is drawn from the mains supply, but the unit will not drive the loudspeakers.
- Press the mode switch once to switch between Standby and ON modes. (The mode switch is a small pressure switch accessed when standing at the front of the unit. It is located under the bottom lip of the top compartment.
- When the amplifier has been switched to ON, the LEDs on the front and rear will glow green.
- The amplifier is now ready to drive your loudspeakers.
- It is recommended that the unit be switched to standby when not in use.

It is safer to turn the mains power off when not using the dm38. However the amplifier may be left on in the standby mode for prolonged periods. If you wish to turn the mains power off, the amplifier has a very minimal warm up period.

Electronic Protection and Reliability

Electronic protection circuitry and amplifier reliability, alas, is an area sadly neglected by many high-end audio amplifier designers. HALCRO™ has paid a great deal of attention to this area.

Components

Our components are selected for not only performance but reliability as well, for example:

- All Halcro electrolytic capacitors are rated at a minimum of 105 degrees C instead of the usual 85 degree rating. The operational life of electrolytic capacitors is severely shortened at temperatures near the maximum temperature rating. This is shown in the table below.
- All Halcro integrated circuits are at least "industrial grade" rather than the usual "commercial grade". Industrial grade components are rated at least from –40 degrees C to +85 degrees C whereas commercial grade components are only rated from 0 to 70 degrees C. In addition, the electronic specifications of industrial grade components are superior to commercial grade.

Electrolytic capacitor temperature rating	Mean lifetime at 40 degrees Centigrade	Mean lifetime at 85 degrees Centigrade	Mean lifetime at 105 degrees Centigrade
85 C (most commonly used)	50,000 Hours	2,000 Hours	(0)
105 C (used in Halcro amplifiers)	180,000 Hours	8,000 Hours	2,000 Hours

Typical data from a highly respected manufacturer.

Considering that most amplifiers run at significantly elevated temperatures, it can be seen from the table, that the Halcro high temperature rated capacitors are highly advantageous compared to the standard 85 degree rated devices.

Output current limiting

In terms of maximum available output current, there are basically 3 amplifier type options:

a. An amplifier with a reasonable limit placed on the maximum available output current.
b. An amplifier with no limit placed on the maximum available output current, which will either blow a fuse or self destruct if excessive current is drawn, for example through a dead short.
c. An amplifier with a very high limit placed on the maximum available output current, but designed not to blow a fuse if this very high current is drawn.

If the maximum current drawn from an amplifier with maximum available current limiting is reached under very loud music conditions (amplifier type a. or c. above), highly obvious “cracking” overload sounds may be heard. Note that this overload sound may also occur if a loudspeaker overloads or if any amplifier suffers voltage overload.

There is an expectation in the audiophile electronic industry that a high end amplifier should be capable of delivering exactly double the output current for a halving of the loudspeaker impedance (down to 1 ohm) at the maximum output voltage that the amplifier can produce.

This requires an amplifier of type b. or c. above. The table below lists an example of an amplifier rated at 150 Watts output into 8 ohms.

Loudspeaker load impedance	Output power	Peak output voltage	r.m.s. output current	Peak output current
8 ohms	150W	49V	4.33A	6.12A
4 ohms	300W	49V	8.66A	12.25A
2 ohms	600W	49V	17.32A	24.5A
1 ohm	1200W	49V	34.64A	49.A

If the loudspeaker cable is inadvertently shorted out, these sorts of currents are quite capable of causing some cables to catch fire. We know of one such instance with an amplifier rated according to the table!

As we do not wish to set your house on fire we have limited the peak output current to 15A.

One also has to question the belief that an amplifier should be capable of such unreasonably high output currents. Consider the following facts:

- Most loudspeakers have impedances of 4 ohms (not 1 or 2 ohms).
- All valve amplifiers are output current limited, and yet the industry does not consider this a problem, which is inconsistent with the belief that maximum available current limiting is a problem.
- All well designed loudspeakers have impedances that do not deviate excessively from their nominal impedances and hence no excessively high currents are required anyway.
- If indeed a 4 or 8 ohm loudspeaker does have an impedance of 1 ohm at a particular frequency, one must wonder where the heat generated is dissipated if this load is predominantly resistive or why the coupling is so poor if this load is predominantly reactive.

Hence we believe that these excessively high output currents are,

- not required for well designed loudspeakers, and
- highly dangerous.

Many people have listened to maximum available current limited amplifiers played through different loudspeakers without encountering any current limiting problems that is, obvious “cracking” sounds at very loud listening levels, except for loudspeaker or voltage overloads which are independent of current limiting.

Output transistor protection

Halcro uniquely incorporates circuitry which accurately calculates the mean power dissipated in the power output transistors (power FETs). Another calculating circuit then may reduce the maximum available output current according to the heatsink temperature and calculated average dissipated power in the transistors. The higher the heatsink temperature, and the higher the mean power dissipated in the output transistors, the greater this reduction. This will only occur at very high heatsink temperatures and very high mean output powers.

Unusual output conditions

The vast majority of amplifier faults show up as high positive or negative d.c. output voltages. An independent circuit in the Halcro amplifiers senses any unreasonable d.c. output voltage and switches the amplifier off if this occurs.

Likewise, if any excessive output current flows for an extended length of time, this also implies a fault and an independent circuit measures this and will shut down the amplifier.

Power supply output current limiting

To further reduce the possibility of fault conditions causing substantial damage, the power supply is limited in its maximum available average output current. Note that this level is higher than the amplifier's normal current limiting conditions. The power supply limit will only cut in under fault conditions.

Internal power supply protection

There are numerous power supply protection circuits, for example:

- Two independent over temperature cut outs.
- Two independent master clock fault sensing circuits.
- All power supplies, including those for "housekeeping" standby, active power factor correction and switch mode power etc check for under/over voltage and over current conditions.
- The small signal power supplies have transient diode over-voltage protection.

Mains transient overload protection

The mains input is protected against all but the most severe mains input transients. Three independent circuits achieve this: two surge absorbers and high energy inductive filtering.

Input overload protection

The inputs have over-voltage protection circuits, which will handle most typical input overloads.

Amplifier inter-stage protection

In addition within the amplifier stages, there are more than a dozen protection circuits.

Specifications for the dm38

POWER
Power output into 4ohms resistive > 350W
Power output into 8ohms resistive > 180W

DISTORTION (Footnote 1).
At full power output, all harmonic distortion orders
THD <-110dB (<3000 parts per billion) up to 20kHz (100kHz B.W.) at 350W into 4 ohms.
THD @ 1kHz <-130dB (<300 parts per billion).
For sum of 19 and 20kHz tones, each delivering 100W into 4 ohms = peak power 350W, intermodulation products each <-110dB relative to output.
SMPTE-IM intermodulation products each <-110dB relative to output.

INPUTS
There are 3 input modes:

- An unbalanced voltage mode input with an impedance of 10kohm
- A balanced voltage mode input with an impedance of 10kohms + 10kohms
- A current-mode input with a 60ohm input impedance to minimize cable reflections (to be fed from an infinite impedance current source)
- Voltage gain of the balanced and unbalanced inputs is 30V / V
- The gain of the current mode is 5V / mA

NOISE
The equivalent input noise at the input is 5nV / sqrt(Hz) for the voltage modes and 6pA / sqrt(Hz) for the current mode.

SLEW RATE LIMIT: 100V / µs

POWER SUPPLY (Footnote 2).

- Active power factor correction minimizes mains current harmonic distortion
- 110V model operates from 100-120V RMS, 45-65Hz,
- 240V model operates from 220-240V RMS, 45-65Hz.
- Less than 100 parts per million mains hum and ripple on the amplifier power rails
- Conforms with all current emission and safety standards

OVERLOAD (Footnote 3).
Recovery from hard overload at 20kHz into 4ohms: 1µs.

DIMENSIONS

- Height, 31 inches or 79 cm
- Width, 16 inches or 40 cm
- Depth, 16 inches or 40 cm
- Weight, 120 lbs. or 55 kg
- Shipping weight, 187 lbs. or 85 kg

PROTECTION
THE AMPLIFIER PROTECTION:

- Is short-circuit proof
- Has over current limiting
- Will cut out if temperature is excessive
- Will cut out if a continuous D.C. offset appears on output
- Will cut out if output current exceeds 10A average continuously over a period of a few minutes
- Is protected against most input overloads

THE POWER SUPPLY PROTECTION:

- Will cut out if most common faults are detected in the power supply (e.g. over-voltage, master clock at incorrect frequency, excessive temperatures etc)
- Is protected against most mains transients

COMPONENTS (Footnote 4).

- All semiconductors are at least industrial grade in both the power supply and amplifier, for reliability
- All electrolytic capacitors are exceptionally long life industrial grade in both the amplifier and power supply
- Only highly linear resistors and the lowest impedance polypropylene capacitors are employed in the critical audio path
- 6-layer PCBs are used in the power amplifier to minimize stray magnetic fields and to accurately define voltages
- 4-layer PCBs are used in the power supply to minimize E.M.I. and voltage transients, which improves reliability and power efficiency

COMPARTMENTS
There are 3 heavily shielded compartments:

- Power supply unit
- Input amplifier section
- Power amplifier compartment

FILTERING
Series and common mode EMI filtering is present

- on the mains input
- between the amplifier and power supply

High frequency filtering is present at the inputs and output.

FOOTNOTES

1. THD specifications of our typical best competitors are, 200,000 parts per billion.
2. Unique to the best of our knowledge.
3. Indicates no excessive negative feedback.
4. "Industrial" grade is a higher grade than the "commercial" grade used by most manufacturers.

Care and Maintenance

The HALCRO™ dm38 has been designed for indoor use only. Under no circumstances should the amplifier be allowed to get wet. The only maintenance required will be ensuring the unit is kept clean.

Important

HALCRO™ takes no responsibility for any damage caused through careless or improper cleaning techniques. Never use flammable products when cleaning the HALCRO™ dm38.

Please read the following procedures very carefully

- The outer surface of the unit is anodized aluminum, which while being very durable, will be marked if rubbed with an abrasive cloth.
- Prior to cleaning, turn the power to the unit off at the mains.
- Use only extremely soft cloths.
- Use a soft dry cloth to remove any dust, particularly from the heatsink area.
- Add 15 mls (0.5 oz) of very mild household dishwashing detergent to a 4-litre (1 gal) bucket of luke warm water.
- Immerse the soft cloth in the bucket of water, then wring the cloth out thoroughly until the cloth is nearly dry.
- The slightly damp cloth should only ever be used to clean the anodized aluminum surfaces and timber feet. Never clean any electrical fittings, terminals or the front and rear Labels with the damp cloth. The labels can be cleaned using an extremely soft polishing cloth, which must be dry. No moisture should ever be allowed to enter the amplifier's compartments through the joins in the panels.
- After using the slightly damp cloth, wipe over the surfaces with a soft dry cloth, and then allow the amplifier to air for at least one hour prior to turning the power back on.
- If you are unsure about the cleaning of the amplifier and require more information, please ask your dealer or contact HALCRO™ at service@halcro.com

Troubleshooting

The HALCRO™ dm38 contains no user serviceable parts inside the compartments. Please do not attempt to open the unit as this will void the warranty and will expose you to dangerous voltages. For all service requirements please contact your dealer, or HALCRO™ at service@halcro.com

Symptom	Suggestion
No Sound or light	1. Ensure mains cable is plugged in to the amplifier. 2. Ensure the mains cable is plugged into a working wall socket. 3. Ensure the Master Switch is ON. 4. Check Fuse.
Red light is on, No sound	1. Press the Standby / ON switch to ON.
Green light is on, No sound	1. Ensure Input Selector Switch is set to the correct input. 2. Ensure Loudspeaker Cables are correctly connected (both ends). 3. Ensure the Input cables are correctly connected (both ends). 4. Check preamplifier is on and correctly connected. 5. Check for a signal from the preamplifier (with headphones if available). 6. Check audio source is on and correctly connected. 7. Check for a signal from the audio source (with headphones if available). 8. Try a different audio source.

If none of the above rectifies the problem please contact your dealer for service.

Service

The HALCRO™ dm38 has been designed for maximum reliability. If a problem does occur with your unit, please contact your dealer.

Contact your dealer to help you with some troubleshooting prior to organizing service for your amplifier. Your dealer or HALCRO'S service department will always try to help you correct any basic problems at your home via email or telephone.

If service is required, all problems must be described in as much detail as possible. This will help streamline the service process.

Return authorization from HALCRO™ prior to shipment must be obtained for any service requirements. To obtain this authorization, please ask your dealer or email us at service@halcro.com

The original packaging is required for shipping purposes. HALCRO™ will not be responsible for any damage caused to your amplifier during shipping due to improper packaging. If the packaging needs to be replaced on its arrival at the factory, the owner could be charged replacement costs.

Warranty

IMPORTANT - Please read the following details very carefully

The dm38 is warranted to be free of defects if used under normal conditions for a period of ninety (90) days from the date of purchase. To extend the warranty period to five (5) years, please complete and return the warranty registration form.

As mentioned previously, do not attempt to open up any of the amplifier compartments. The compartments are sealed at the factory. If any of the seals are broken, the warranty will be void and all service, repair and freight costs will be charged to the owner. Willful damage, tampering, and damage caused by moisture are not covered by the warranty.

The warranty will only be recognized by HALCRO™ if a copy of the original receipt from your dealer showing all details including the date of purchase, accompanies a copy of the completed warranty registration form. The warranty period will commence at the date of purchase, not at the date the warranty registration form is received by HALCRO™.

Return authorization from HALCRO™ prior to shipment must be obtained for any warranty requirements. To obtain this authorization, please email HALCRO™ at service@halcro.com or fax + 61 8 8238 0852.

The original packaging must be used for shipping the amplifier for warranty requirements. This will ensure the safety of the amplifier. If you have misplaced or damaged the original packaging, you can purchase new packaging through your dealer or HALCRO™.

The warranty registration form is included in this owner's manual on the following page. Please cut it out carefully along the line up the left-hand side of the page and return it to HALCRO™. You will find HALCRO'S address and facsimile details on the warranty registration form.

PLEASE COMPLETE ALL SECTIONS OF THE FORM. FAX OR POST THE COMPLETED WARRANTY REGISTRATION FORM TO HALCRO™ IMMEDIATELY. WE WILL THEN NOTIFY YOU OF ITS ARRIVAL AND ACCEPTANCE.

Warranty Registration Form

One form must be completed for every amplifier.

Title……

First name…….. Surname…….....

Address…….…… .....

…….…….. ...

Zip or post code……Country…….....

Date of Birth Day……..Month……Year……..

Phone numbers Home (……)…….. Work (……)…….…….....

Facsimile numbers Home (……)…… Work (……)……..... ……

Email address……

PRODUCT DETAIL

Model number dm38

Serial number …….. (located on a badge at the bottom of rear panel)

Date of purchase Day..…….Month……..Year……..

Purchased from (Dealer name)…..…….....…….……...
You must attach a copy of the original receipt for the warranty to be accepted.

Please describe the main function for the amplifier.
Domestic use ☐ Commercial use ☐ Demonstration use ☐

Please refer to the previous page for details of the warranty period for your model.

Post to, HALCRO,
118 Hayward Avenue ,
Torrensville, South Australia 5031.
Fax to, +61 8 8238 0852