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**The Martin Experience**



This equipment conforms to the requirements of the EMC Directive 89/336/EEC, amended by 92/31/EEC and 93/68/EEC and the requirements of the Low Voltage Directive 73/23/EEC, amended by 93/68/EEC.

Standards Applied

EMC Emission	EN55103-1:1996
Immunity	EN55103-2:1996
Electrical Safety	EN60065:1998

## 1 INTRODUCTION

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Thank you for purchasing a Martin Audio M3 system controller. The M3 controller is used to optimise the performance of the Blackline series of loudspeakers in all modes of operation.

## 2 UNPACKING

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Each Martin M3 controller is built and tested to the highest standard and thoroughly inspected before it leaves the factory. After unpacking the unit, please examine it carefully for any signs of transit damage and inform your dealer if any such damage is found. It is suggested that you retain the original packaging so that the unit can be repacked at a future date if necessary.

Please note that Martin Audio and its distributors cannot accept responsibility for damage to any returned product through the use of non-approved packaging.

## 3 INSTALLATION

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The M3 requires a vertical rack space of 1U (1.75"/44.5mm). As with any low level signal processing equipment it is recommended that it is sited well away from any high level sources of electromagnetic radiation, and should not for example be placed directly above power amplifiers or lighting dimmers, which could induce residual noise into the system.

## 4 MAINS CONNECTIONS

The M3 is supplied with a captive mains lead with an integral U.K. BS1363 3 pin plug. **Should the moulded plug be removed and another plug substituted the cable must be re-wired as below.**

GREEN/YELLOW	-	EARTH
BROWN	-	LIVE
BLUE	-	NEUTRAL

**WARNING: The M3 Controller must always be operated with the mains safety earth connected.**

The M3 is supplied from the factory in either 100-120V or 200-240V versions  
Mains voltage tolerance +/- 10% on each setting

Fuse: - type 'T' semi-delay 160mA (L) 100-120V  
Fuse: - type 'T' semi-delay 160mA (L) 220-240V

**NO ATTEMPT SHOULD BE MADE BY THE USER TO CHANGE THE MAINS OPERATING VOLTAGE FROM THAT SUPPLIED, REFER TO QUALIFIED PERSONNEL ONLY.**

This equipment must be earthed.



**CAUTION  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN  
DO NOT EXPOSE TO RAIN  
OR MOISTURE**



It should not be necessary to remove any protective earth or signal cable shield connections.

## 5 SIGNAL CONNECTIONS

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### 5.1 Input connections

M3 inputs are on female XLR-type connectors and are electronically balanced. Pin 1 is normally open circuit but may be linked to Ground (chassis earth) or Lift (signal 0V) by positioning jumper links on the main PCB (**J1,J2**).

The signal is always applied between pin **2** (hot +) and pin **3** (cold -).

Always use 2-core plus screen 'balanced' type signal cable, even for unbalanced circuits. The screen should be regarded as separate from the signal return, even if they are connected together at one end of the cable. Cable lengths longer than 3 metres should be avoided for unbalanced connections.

For either balanced or unbalanced operation, always connect the input signal between Pins 2 and 3. The input cable screen should be derived from the equipment which is sourcing the input provided that normal safety requirements are met (i.e. the mains earth is connected correctly).

### 5.2 Output connections

M3 outputs are electronically balanced auto-compensating via male XLR type connectors. Pin **1** can be configured to be open circuit or lifted (signal 0V). The output signal appears between Pins **2** and **3**.

Always use 2-core plus screen 'balanced' type signal cables, even for unbalanced circuits. The cable screen should be regarded as separate from the signal return, even if they are connected together at one end. This is to keep the screen a true screen so that signal return currents do not flow through it, which can induce signals in adjacent cables

For unbalanced use, whichever pin you have designated to be hot (+) connect the corresponding cold pin (-) and Pin 1 together. The internal output signal grounds **J3, J4, J5, and J6** should be placed in the open circuit position which allows the amplifier to be locally grounded (as required for safety reasons) without causing a hum loop. If the signal is taken between Pin **2** or **3** and Pin **1** a level loss and signal degradation will occur. When using unbalanced connections avoid cable lengths greater than 3 metres.

For balanced operation, the screen should be connected at the amplifier end. To eliminate hum current loops jumpers **J3, J4, J5** and **J6** can be placed in the open circuit position.

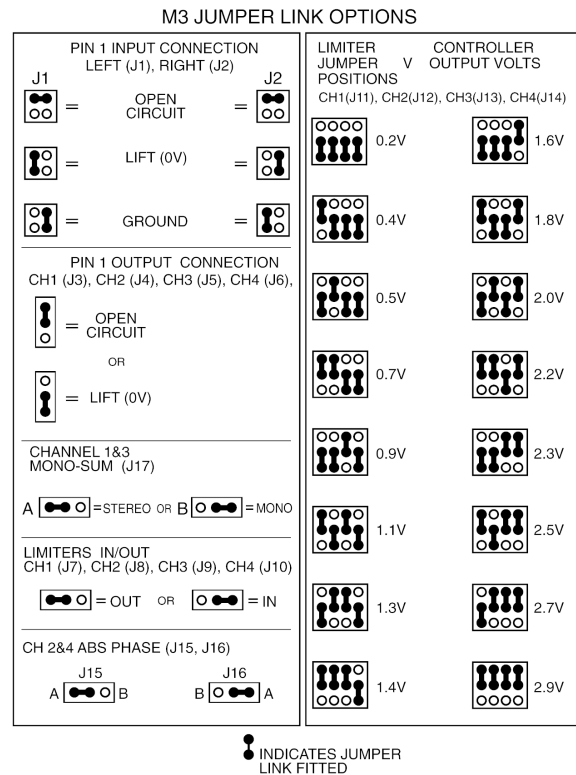
The power ratings of amplifiers connected to the M3 controller should lie within the range recommended for the Blackline series of loudspeakers being used. Please refer to the section on amplification for further information.

## 6 INITIAL SETTINGS

M3 system controllers are supplied set up as follows:

Mains Voltage	-	220-240V
Pin 1 (input) <b>J1, J2</b>	-	OPEN CIRCUIT
Pin 1 (outputs) <b>J3, J4, J5, J6.</b>	-	LIFT (0V)
Mono Sum CH1/3 <b>J17</b>	-	Disabled Position 'A'
Limiters in/out <b>J7, J8, J9, J10.</b>	-	IN
ABS Phase <b>J15, J16</b>	-	Position 'A'
	-	
Limiter threshold	-	0.7V
	-	
Mode switch (Front panel)	-	High Pass (Green LED 'ON')

Depending on which Blackline cabinets are being used, and in which configuration, the mode switch on the front panel will have to be changed from the High Pass position (Green LED 'ON') to the Full Range position (Red LED 'ON'). In the high pass mode, channels 2 and 4 are switched to be high pass outputs, with channels 1 and 3 active in a low pass configuration. When in full range mode the outputs from channels 1 and 3 are muted and outputs 2 and 4 are configured to be full range outputs. Please refer to section 7 for individual card set up information.



## 7 M3 SYSTEM CONFIGURATIONS

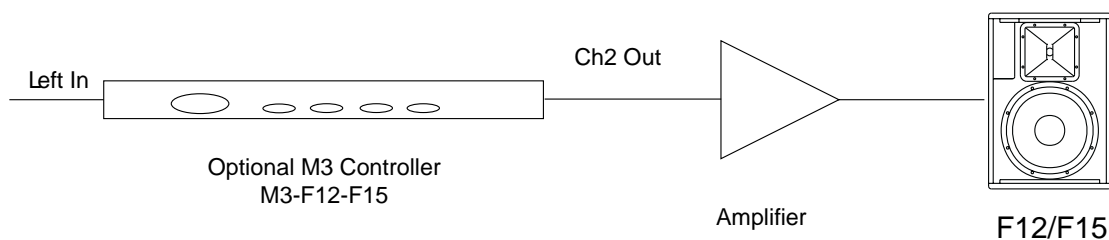
There are many different system combinations possible with the blackline series. Shown below are some typical configurations. Please note that for simplicity only the left channel is shown.

### 7.1 Passive systems

#### 7.1.1 F12/F15 Full-range

M3-F12-F15

Mode Switch Full-range (Red LED)  
 J7, J8, J9, J10 IN  
 J15, J16 POSITION 'A'  
 J17 POSITION 'A'

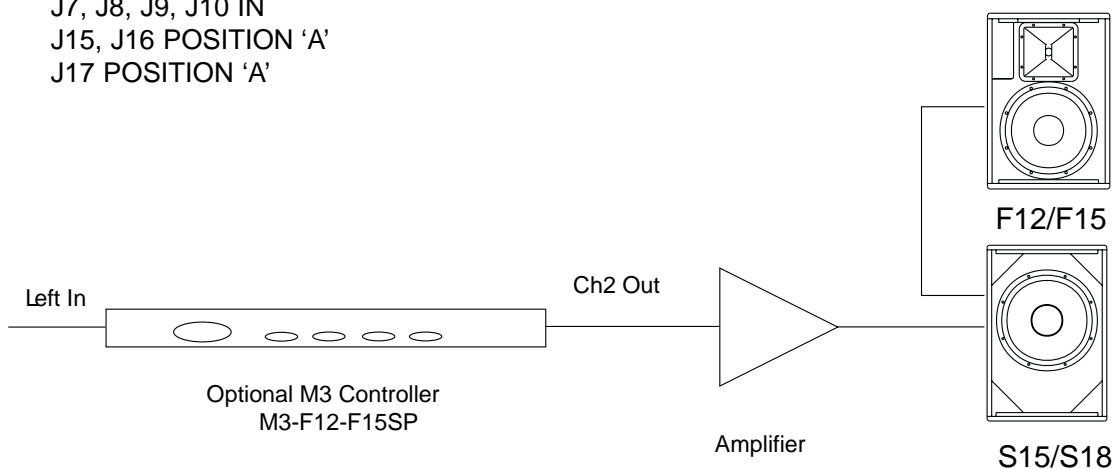


#### 7.1.2 F12/F15 Full-range with add-on S15/S18 sub-bass

M3-F12-F15SP

This provides a simple way of increasing bass performance without the need for an additional amplifier. The switch at the rear of the sub-bass enclosure should be switched to "passive" and a link lead run from the sub-bass to the F12/F15. This configuration will present a 4 ohm load to the amplifier.

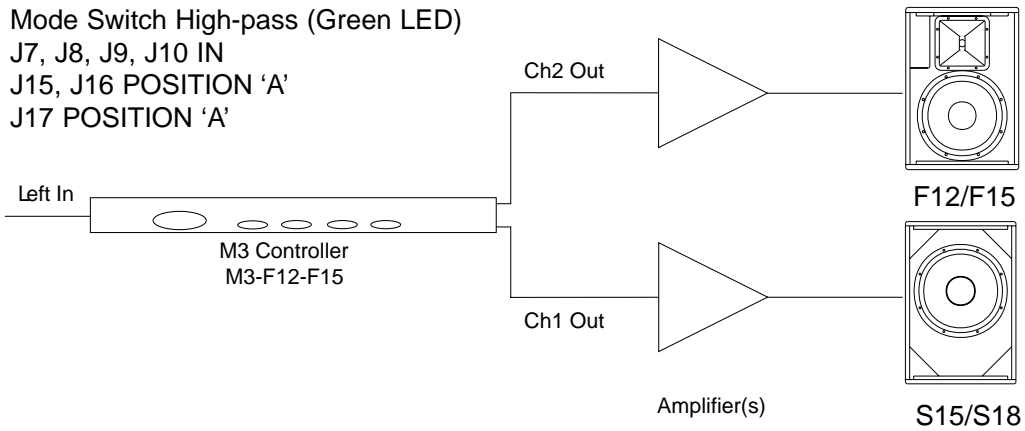
Mode Switch Full-range (Red LED)  
 J7, J8, J9, J10 IN  
 J15, J16 POSITION 'A'  
 J17 POSITION 'A'



## 7.2 Bi-amped systems

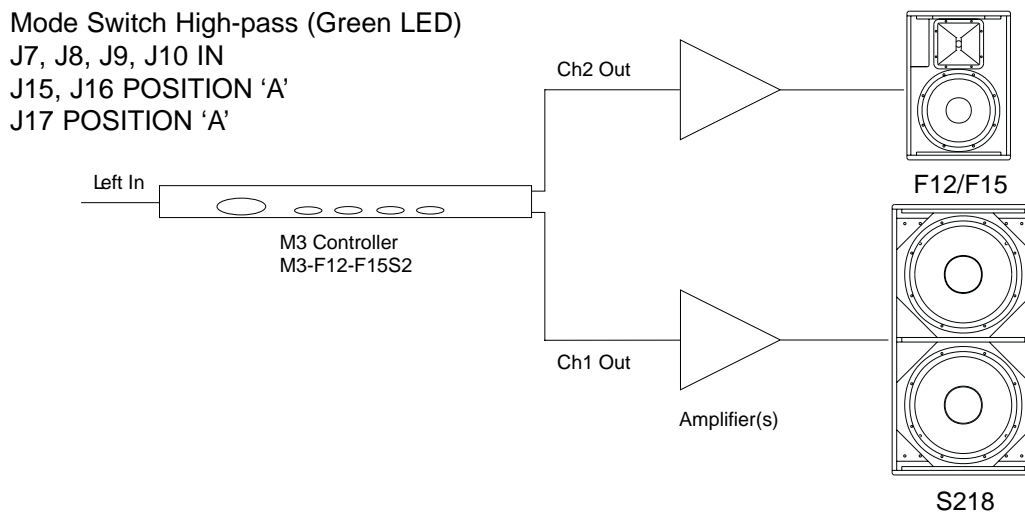
### 7.2.1 F12/F15 with S15/S18 sub-bass

M3-F12-F15



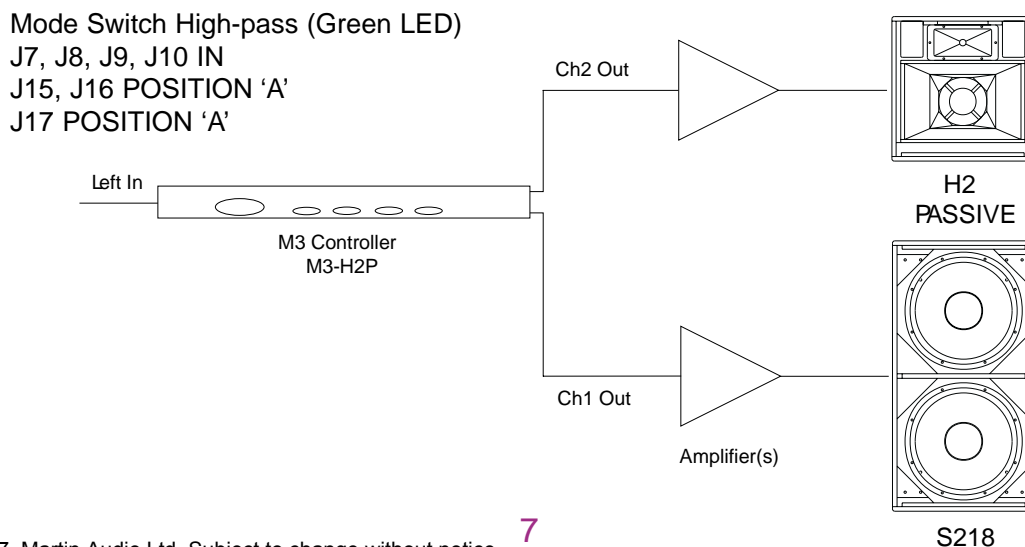
### 7.2.2 F12/F15 with S218 sub-bass

M3-F12-F15S2



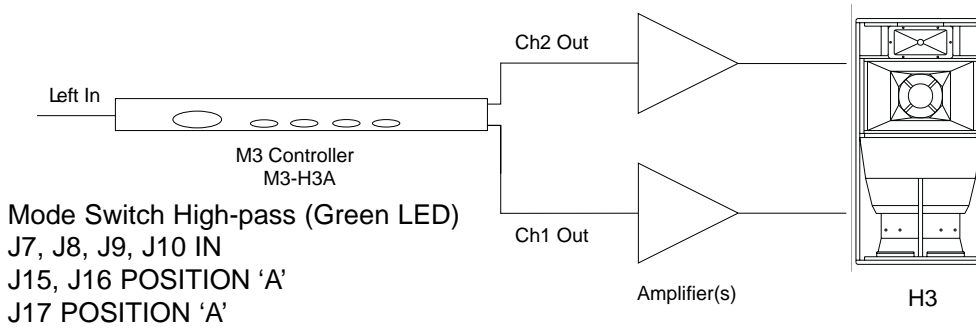
### 7.2.3 H2 Passive with S218 sub-bass

M3-H2P



7.2.4 H3 Full-range

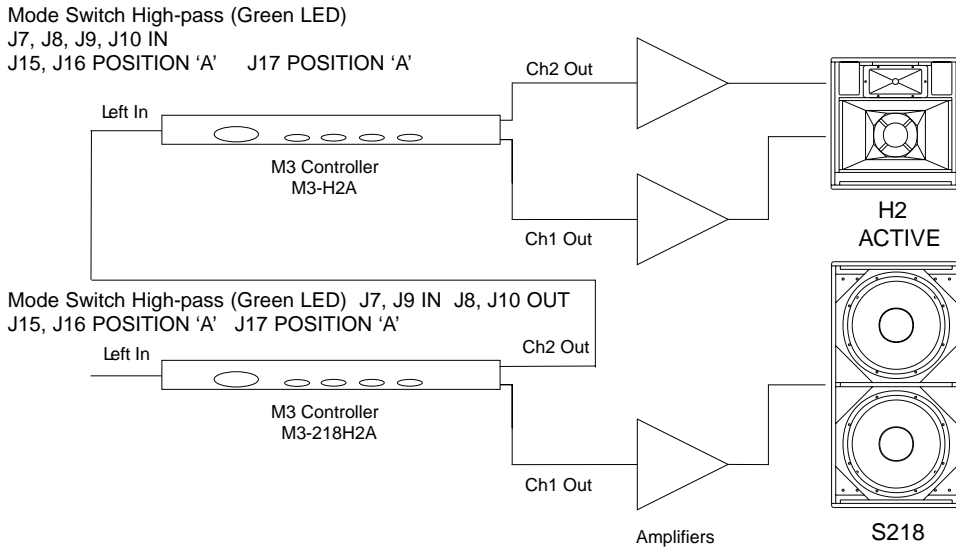
M3-H3A



7.3 Tri-amped systems

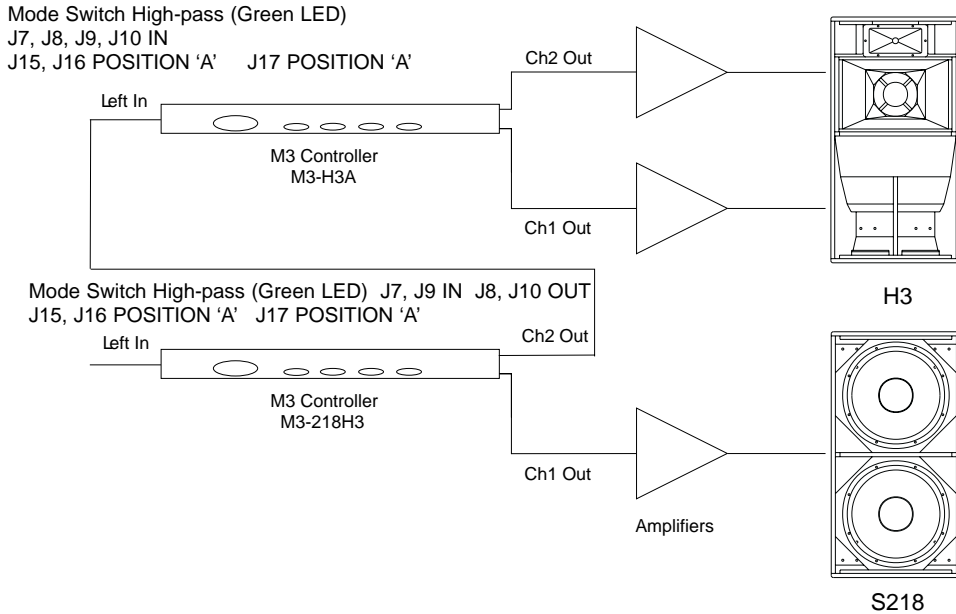
7.3.1 H2 Active with S218 sub-bass

M3-H2A & M3-218H2A



7.3.2 H3 with S218 sub-bass

M3-H3A & M3-218H3





## 8 LEVELS

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The system-specific plug-in top cards provide the necessary channel gain or attenuation to provide approximate system balance when the level control is in the 0dB position. This assumes the use of amplifiers with identical gains. Plus and minus 3dB's of gain or attenuation is available on outputs 1 and 3 to adjust the balance of the system with respect to channels 2 and 4 which have a nominal output level of 0dB.

Please note the M3 controller will always be shipped with the level control set in the 0dB position. The screwdriver 'slot' in the end of the spindle is un-calibrated and does not correspond to the front panel markings.

## 9 LIMITERS

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Each M3 output has an associated limiter, which provides momentary gain reduction when the output signal level exceeds a pre-set threshold value. A red LED indicates the onset of limiting. Threshold settings for the limiters may be adjusted by first **disconnecting the power to the M3**, then removing the top cover (two screws on each side). The plug-in top card must then be un-clipped from the four locating pillars and swung up on it's ribbon cable to reveal the four banks of selector pins **J11, J12 J13, and J14**. Threshold values corresponding to the jumper link positions are printed on the lid of the controller and duplicated in Section 6.

Each output channel limiter sets a maximum voltage level from the M3, which in turn sets the maximum continuous voltage that the amplifier can present to the loudspeaker.

The limiters in the M3 may be used to control the average continuous power applied to the loudspeakers, if power amplifiers with a higher maximum power rating than that recommended are used. (See Amplifier section). Alternatively, if the loudspeakers selected will handle the full rated power, or if maximum system headroom is required, the limiters may be set to prevent the amplifiers being driven into hard clipping.

**WARNING.** Care should be taken to avoid amplifier clipping. It is important to understand that a low power amplifier driven into clipping is more likely to damage a loudspeaker than a higher power amplifier used within its ratings. This is because music signals have a high peak to average "crest" factor. When an amplifier is severely overdriven, its output waveform is clipped (its peaks are squared off) – reducing the crest factor. In extreme cases, the waveform can approach that of a square wave. An amplifier is normally capable of producing far more power under these conditions than its normal undistorted rated power output. Correct setting of the limiters will automatically avoid amplifier clipping and prevent damage occurring to the loudspeakers.

Each limiter may be completely defeated, by setting **J7, J8, J9 and J10** to the out position. If another M3 is to be driven from any of the output channels (where one M3 splits the signal between sub-bass loudspeakers and the main system crossovers), then the limiters should be defeated on those channels to prevent them operating before the limiters in the following controller.

The use of very high power amplifiers with outputs greater than those recommended is discouraged.

Care should be taken to avoid switch on surges, which can result in momentary power peaks in excess of specified ratings. When powering up a sound system it is important to switch on the amplifiers after the mixer and control electronics have stabilised. When powering down the system, reverse the sequence and switch off the amplifiers first.

## 10 AMPLIFICATION

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Blackline Series loudspeakers are designed to be used with professional power amplifiers capable of producing the following power outputs into 4 ohms per channel:-

F12		400-650W
F15		400-800W
H2	MF/MF+HF	400-650W
H2	HF	100-400W
H3	LF	400-1000W
H3	MF+HF	400-650W
S15		400-1000W
S18		400-1000W
S218		800-2000W

## 11 WARRANTY

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Martin Audio M3 System Controllers are warranted against manufacturing defects in materials or craftsmanship over a period of 1 year from the date of original purchase. During the warranty period Martin Audio will, at its discretion, either repair or replace products which prove to be defective provided that the product is returned in its original packaging, shipping prepaid, to an authorised Martin Audio service agent or distributor.

Martin Audio Ltd. cannot be held responsible for defects caused by unauthorised modifications, improper use, negligence, exposure to inclement weather conditions, act of God or accident, or any use of this product that is not in accordance with the instructions provided by Martin Audio. Martin Audio is not liable for consequential damages.

This warranty is exclusive and no other warranty is expressed or implied. This warranty does not affect your statutory rights.

## 12 TECHNICAL SPECIFICATIONS

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### **M3**

INPUTS	2 Electronically Balanced
IMPEDANCE	20K ohms (10K ohms per leg single ended)
CMRR	60dB 20Hz – 10KHz
CONNECTORS	3 Pin female XLR
OUTPUTS	4 Electronically Balanced
SOURCE IMPEDANCE	62 ohms
MIN LOAD IMPEDANCE	600 ohms
MAX OUTPUT	+20dBu into 600 ohms
CONNECTORS	3 Pin Male XLR
FREQUENCY RESPONSE	-3dB @ 18 Hz 12dB/octave -3dB @ 45KHz 12dB/octave (ultimately set by system parameters)
DISTORTION+NOISE	0.01% THD @ 2V output (limiters cancelled)
SIGNAL+NOISE/ NOISE RATIO	>100dB @ 2V output
LIMITERS	Individual for each channel. Ratio 20:1. Threshold range -12dBu to +12dBu in 16 steps
MAINS SUPPLY	Captive 2m 3 core cable with integral U.K. 3 pin plug
MAINS VOLTAGE	Internally selectable by hard wire link 100-120/220-240V AC, 50/60Hz. Voltage tolerance on each setting $\pm 10\%$
MAINS FUSE	100-120V and 220-240V: - 160mA Type 'T' (L)
DIMENSIONS	(W) 482mm x (H) 44mm x (D) 155mm (W) 19ins x (H) 1.75ins x (D) 6.1ins
WEIGHT	2.4Kg
SHIPPING DIMENSIONS	(W) 545mm x (H) 120mm x (D) 235mm (W) 21.5ins x (H) 4.7ins x (D) 9.3ins
SHIPPING WEIGHT	2.9Kg

Due to our policy of continuous product improvement all specifications are subject to change without notice.

# M3 System Controller



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# M3 System Controller

## User's Guide



**ENGLISH**



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