

Digital Monitor Controller

User Guide



Serial No.

+data



IMPORTANT



Warranty Certificate

Please take a few moments to complete the warranty card at the back of this booklet (or register at www.pmc-speakers.com) as this not only records the purchase of your monitor controller, but also provides you with an opportunity to make suggestions and provide feedback directly to PMC.

Product Support

For product support, accessories or servicing advice, please contact a PMC authorised dealer. See www.pmc-speakers.com

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WEEE European directive: PMC is a member of a National Compliance scheme and has gained the associated certification of compliance from the Environment Agency with the registration WEEE/GJ0101WU.

WEEE EU Directive

This symbol on the product, and in or on its packaging, indicates that this product must not be disposed of with other household waste. It is the responsibility of the owner to dispose of waste equipment via a designated collection point for the recycling of waste electrical and electronic equipment. The recycling of waste equipment is an attempt to conserve natural resources and ensures that it is recycled in a manner that protects human health and the environment. For more information about where to dispose of waste equipment for recycling, please contact your local waste/recycling authority or the dealer from whom you purchased the product.



Contents

- 5 General Usage Guidelines & What's In The Box?
- 6 Introduction
- 7 Features
- 8 Installation
- 10 Power Up Sequence & Error Codes
- 11 Configuration Options & Defaults
- 12 Operation
- 16 Configuration Mode Details
- 31 Appendix A: RS485 DMC-DMI Cable Wiring Details
- 32 Appendix B: GPI Remote Control Input Wiring
- 33 Appendix C: Digital Audio Output Connector Wiring
- 34 Specifications
- 37 Service
- 38 The PMC Professional Range
- 39 Warranty On-Line
- 40 Warranty Certificate – Part 1 – Your copy
- 41 Warranty Certificate – Part 2 – PMC's copy
- 42 Help us improve – Your Comments

General Usage Guidelines

- 1 Read these instructions and keep them in a safe place for future reference.
- 2 Heed all electrical safety warnings.
- 3 This product does not contain an AC mains isolation switch: the AC mains cord serves as the disconnection device. Safety considerations require that the plug and associated power outlet be easily accessible to allow rapid disconnection of AC mains power if necessary.
- 4 Do not attempt to service the equipment. There are no user-serviceable parts inside. Please refer all servicing to PMC authorised personnel.
- 5 Servicing is required when the apparatus is damaged, exposed to moisture, or exhibits a distinct or sudden change of operation or audio performance.
- 6 Unplug this product from both signal source and power during electrical storms, or when unused for extended periods of time.
- 7 Packaging material can pose danger to the young and vulnerable. Ensure these items are stored or disposed of safely.
- 8 The equipment cases should only be cleaned with a dry, lint-free, cloth. Do not use solvents, abrasives, waxes or liquids as they may be detrimental to the finish.
- 9 PMC has made efforts to provide accurate installation information. However, PMC will not be held responsible or liable for injuries or property damage (direct, indirect or consequential) arising out of use or inability to use this product safely and properly.
- 10 This product may contain nuts.

What's in the Box?

- This Handbook.
- Two hardware units: DMI Interface and DMC Controller.
- DMI-DMC hardware connecting cable.
- IEC mains cord.
- 1 audio output loom: AES59 standard (Tascam DB-25) to AES3 XLRs.
- 4 audio input cables: each comprising AES balun (XLR-BNC) and BNC link cable.



Please Note: This unit must be earthed.

Introduction

The PMC **Digital Monitor Controller** is a two-unit surround-sound digital monitor controller system, intended primarily for use with any of PMC's professional monitors equipped with digital inputs. The DMI interface unit accepts two 5.1 and three stereo input sources, and can drive independent 5.1 and stereo loudspeaker monitoring systems. Configurable bass-management facilities are incorporated, along with a range of user-configurable options to optimise the system's operation for specific working environments.



Digital Monitor Controller Unit (DMC)



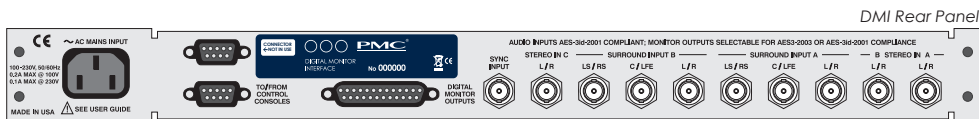
Digital Monitor Interface Unit (DMI)

Features

- Signals are connected, processed and routed entirely within the digital domain.
 - 32-bit FPGA-based signal processing provides an internal dynamic range in excess of 135dB.
 - In standard mode the DMI accepts sample rates up to 192kHz (24 bit).
 - In bass-management mode the maximum sample rate is 96kHz (24 bit).
 - Processing latency is two samples (0.042ms at 48kHz sample rate).
- The compact DMC remote-controller can be placed within easy reach of the user.
 - Powered via its connecting cable from the DMI.
 - The DMC provides input source and output speaker selection.
 - Monitoring volume level is indicated either as attenuation dB, or SPL.
 - A user-calibrated reference monitoring level can be established.
 - User-configurable Dim attenuation.
 - Individual channel mute, solo, and 'Pop Solo' (solo-in-front) functions.
 - Comprehensive bass-management is available.
 - Configurable stereo and mono down-mixing modes.
 - Individual speaker-level trim adjustments (± 12 dB in 0.5dB steps).
 - Up to 340ms delay can be applied to all inputs, with two stored settings.
- All digital audio connections are made via the rack-mounting DMI processor.
 - Two 5.1 and three stereo inputs via BNC connectors (AES3-id / SMPTE 276M format).
 - Input cables and AES3 baluns are included for one 5.1 and one stereo input.
 - Separate 5.1 and stereo loudspeaker outputs.
 - Additional fixed-level outputs for digital metering or dubbing.
 - Eight-way output loom included: AES59 (Tascam DB-25) to AES3 (XLR).
- The system can be synchronised to an external reference or any selected input.
 - Sync Input (BNC) accepts word-clock, DARS (AES11), or bi- and tri-level video.
 - Stereo Input C is equipped with an asynchronous sample rate converter (SRC).
 - SRC accepts sample rates from 8kHz to 216kHz.
 - Stereo input C can be mixed with any other selected input, if required.
 - The SRC output is available as a fixed-level direct signal output.
 - SRC input latency is typically 1ms.

Installation

The PMC DMI unit occupies 1U of a standard 19-inch equipment rack. There are no user-controls on the interface, but all the audio input and output connections are made via its rear panel, so it makes sense to locate it close to the relevant source audio equipment. The DMI unit does not have an AC mains isolation switch, so the mains plug and associated power outlet should be easily accessible in case quick disconnection of mains power is necessary.



1. All audio and control connections should be made before connecting the AC mains supply.
2. Connect the DMC controller to the DMI interface using the included RS485 D-sub cable.
 - i. This cable is attached to the 9-pin D-sub connector at the rear of the DMC Remote Controller. The opposite end plugs into the lower of the two 9-pin D-sub connectors on the rear of the DMI.



- ii. Wiring details are provided in Appendix A (page 33) should you wish to construct a bespoke DMI-DMC cable.
 - iii. The upper 9-pin connector on the DMI can be used for optional GPI remote control signals (see Appendix B on page 34).
3. Attach the supplied AES59 break-out loom to the 25-pin D-sub connector on the rear of the DMI unit. This loom terminates in eight XLRs, each providing a dual-channel AES3 signal as follows:

1. *Direct (fixed-level) 5.1 L/R*
2. *Direct (fixed-level) 5.1 C/Sub-woofer*
3. *Direct (fixed-level) 5.1 Ls/Rs*
4. *(Fixed-level) Stereo Input C direct (SRC converted)*
5. *5.1 Loudspeaker L/R Feed*
6. *5.1 Loudspeaker C/Sub-woofer Feed*
7. *5.1 Loudspeaker Ls/Rs Feed*
8. *Stereo Loudspeaker L/R Feed*

Outputs 5, 6 and 7 connect to the 5.1 loudspeaker monitor system, with output 8 to the stereo monitors. Outputs 1-4 can be used for external metering or switched record/dubbing feeds, if required. The AES59 connector wiring is described in Appendix C (page 33).

Installation

4. Plug three of the supplied BNC link cables into the three Surround Input A input BNC connectors: (L/R, C/LFE, and Ls/Rs).
5. Attach the other ends to the appropriate 5.1 source outputs (via the supplied AES3 baluns, if required).
 - i. A second set of 5.1 inputs is available on the DMI, and additional optional interface cables can be obtained from PMC, if required.
6. Connect the fourth supplied input cable (and AES3 balun) to Stereo Input C (L/R).
 - i. Two further stereo input connections are available.
 - ii. Stereo Input C includes a sample-rate converter to accommodate a non-synchronous source, or one operating at a different sample rate from the other input sources.
 - iii. Input C can be mixed with any other selected input source, if desired.
7. An external clock reference signal can be connected to the Sync Input, if required.
 - i. Ideally, all digital inputs should be synchronous with each other, and a master clock reference provided to the DMI.
 - ii. The unit can be configured to derive its clocking from the currently selected input, although this may result in clicks or splats when selecting a different input source.
8. Mains power can now be connected at the rear of the DMI unit.
 - i. An appropriate C13 IEC mains cord is included with the unit.
 - ii. There is no mains isolation switch on the DMI, and the unit will start its power-up sequence as soon as mains power is supplied.
 - iii. The DMI's internal universal power supply will accept any AC mains supply voltage between 85 and 253V (100-230 VAC nominal).
 - iv. The maximum power consumption is 15 Watts.

Note: The channel status, user and validity bits of the AES output signals are set by the DMI. Data from the selected input is not passed through.

Channel status is set to professional mode, indicating the current system sample rate, a 24 bit word length, and the correct CRC. User bits are all set to 0. The validity bit is set to 1 when a valid sync source is detected.

Power-Up Sequence

As soon as mains power is connected to the DMI unit the system will perform an initial power-on sequence. The two status LEDs on the front of the DMI unit flash as the system firmware loads and the self-tests are performed. On completion both LEDs should illuminate steadily to indicate normal operation. If either LED flashes after the power-up sequence is complete, something is wrong!

The left-hand LED flashes if the DMC is demanding excessive current from the power supply. This is most likely to be caused by a fault with the connecting cable to the DMC unit. The right hand LED flashes if a valid digital synchronisation source cannot be found (external clock reference or a valid digital source signal, depending on clock source configuration).

Simultaneously with the DMI's initialisation, the DMC controller goes through its own power-on sequence. Every LED on the controller is illuminated in turn, and the 4-digit display tests each segment. Next, a series of software version messages are displayed, starting with the code '77' followed by the DMC's software edition and connection address. Next, code '76d' is shown, followed by the DMI's main software edition, then 'FPGA' and the FPGA logic version.

Error Codes

If a fault is detected during the power-up sequence, a diagnostic code may be displayed on the DMC.

'Err 1' indicates that the DMC is not able to communicate correctly with the DMI, probably because the cable is disconnected or damaged.

'Err2' indicates a problem with the FPGA digital signal processor in the DMI. If a power on-off-on re-boot fails to clear this error then the unit should be returned to PMC for service.

'Err3' will be displayed if the system is configured to use bass-management but the external reference or source sample rate is outside the permitted range (44.1 – 96kHz).

After the successful completion of the power-on sequence the monitor controller is ready for normal operation.

Configuration Options & Defaults

The PMC Digital Monitor Controller system can be used in its factory-default condition, but in most applications its operation can be optimised by adjusting the comprehensive user-configurable options to suit the specific application and installation.

The configurable parameters and their factory defaults are listed below:

- Sync source – *L/R input of currently selected source*
- External sync input termination – *Terminated with 75 ohms*
- Audio-synced-to-video sample rate – *48kHz*

- Stereo Input C sample rate converter – *Enabled*
- Input Delay settings A/B – *0ms for both A and B memories*
- Loudspeaker feed connection format – *All AES3 (balanced, 110 Ohm, 5Vpp)*
- Direct output connection format – *All AES3 (balanced, 110 Ohm, 5Vpp)*
- Remote Inputs – *Enabled (Remote Mute All and Remote Dim)*

- Level display (attenuation or SPL) – *Attenuation display mode*
- Reference monitoring level – *Set at -60dB attenuation (marked as 85dB SPL)*
- Auto reference level off – *Disabled*

- Surround-to-stereo down-mix levels – *L&R 0dB, C -6dB, LFE off, Ls&Rs -3dB*
- Dim level – *Set at -20dB*
- Pop Solo levels – *Soloed channel +6dB, other channels -6dB*

- Monitor output level adjustments – *All at 0dB for stereo and 5.1 monitor outputs*
- Direct surround output mode – *Pre-downmix*
- Stereo Loudspeaker output enable – *Enabled*

- 5.1 bass-management – *Disabled*
- Stereo bass-management – *Disabled*
- Bass-management filter slopes – *-24dB/Octave high-pass and low-pass*
- Bass-management crossover – *80Hz*
- Mute/solo in bass-management mode – *Before bass-management*

- DMC connection address – *Device Address A1*

Operation

When the system completes its power-up sequence it will revert to the last operating condition prior to switch-off, except that the loudspeaker output level will be reset to minimum. Either the rotary level control or the reference level button must be used to return the loudspeaker output to the desired listening level.

DMI Interface Unit

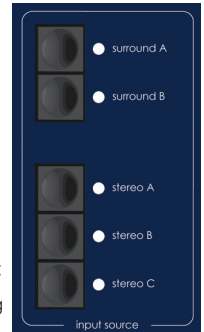
There are no user-controls on the DMI interface unit, and the only operational consideration is if either of the two LEDs is flashing. The Monitor Controller status LED (left) will light whenever the DMC is communicating with the DMI, but constant and rhythmic flashing indicates that the DMI has detected a fault condition (see Power-Up Sequence on page 12). The Sync status LED will light steadily whenever a valid timing reference signal is connected, and flash if a valid sync signal is absent. The DMC display will also indicate 'NO SYNC'. If a new valid sync signal is detected the DMC will display 'SYNC' and then briefly show the new sample rate.

DMC Controller

The DMC's operator functions are divided into five main sections: input source selection, downmixing, speaker output functions, channel mute/solo, and display.

1. Input Source Selection: The five input sources (two 5.1 and three stereo) are selected via the buttons on the left-hand side of the controller, and the associated LEDs indicate the currently selected input. If the sample rate changes when a new source is selected, the new rate is displayed briefly.

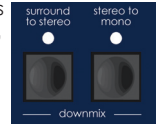
Normally only one source is selected at any one time, but Stereo Input C can be selected either by itself, or mixed with one of the other four inputs. This is made possible because the SRC on Stereo Input C ensures accurate synchronisation with any other selected source. The mixed mode is activated by pressing and holding the Stereo Input C button and then pressing the button for the other desired input. The two corresponding LEDs will light.



If an 'Err3' message is displayed and the 'Mute All' function activated when you try to select a source, it is because the sample rate of the selected input exceeds the maximum allowed when bass management is enabled (96kHz). Selecting a source with a rate at or below 96kHz will resolve the issue, and normal operation will resume.

Operation

2. Downmix: The two downmix buttons above the 4-digit display allow compatibility checks (phase relationships and inter-channel levels). A surround (5.1) signal can be 'folded down' to stereo, and a stereo signal can be summed to mono. The Surround-To-Stereo downmix function is only available when surround inputs A or B are selected.



The downmix functions always affect the loudspeaker monitor outputs, but they may also affect the direct fixed-level outputs as well, depending on the unit's configuration. When the Surround-To-Stereo downmix is enabled the C, LS, RS, and SUB monitor loudspeaker outputs are all muted.

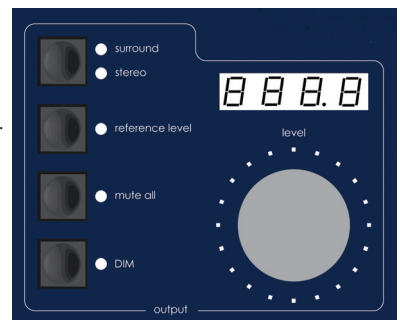
The current downmix state is remembered for the current input, so if Surround Input A is selected and the Surround-To-Stereo downmix enabled, this combination is recalled automatically if the input is temporarily switched to another source and then back to Surround Input A.

The Surround-To-Stereo downmix matrix routes the Centre channel equally into the Left and Right front channels. The surround channels are mixed individually into their corresponding front channels (Ls to L, and Rs to R). The resulting composite stereo signal contains all of the L, R, C, Ls and Rs elements. The LFE channel is normally omitted completely from the downmix, but it can be included if desired. The relative levels of C, Ls, Rs, and LFE in the stereo mix can be altered from the default balance in the configuration mode.

The Stereo-To-Mono downmix combines the Left and Right audio channels to create a single monaural signal which is sent to the Centre surround monitor loudspeaker (L, R, LS, RS, and SUB outputs are all muted). Pressing the Stereo-To-Mono downmix button when a surround input is selected will automatically engage the Surround-To-Stereo downmix as well, so that the mono output is derived correctly from all of the contributing input channels.

3. Speaker Output Functions: Four buttons and a rotary control are associated with the surround and stereo loudspeaker outputs. These select the surround and stereo monitor speakers, engage the preset reference level, Mute All, and Dim the outputs. The rotary level control adjusts the monitor output levels. None of these controls affects the direct (fixed-level) surround and stereo outputs.

The Surround/Stereo button switches between 5.1 and stereo loudspeaker systems; when one is active the other is muted. However, the DMC can be configured with the stereo output disabled, in which case this button will do nothing and only the surround outputs will be available.



Operation

A useful secondary feature associated with the Surround/Stereo button is that, if it is pressed and held, the display will show the system's current sample rate.

The Reference Level button sets the selected loudspeaker output to a preset volume level (set in the configuration mode). The LED associated with the Reference Level button will light whenever the function is active, and the 4-digit display will indicate the reference output level. (The system's default setting is -60.0 dB). When adjusting the level manually, the Reference Level LED will flash whenever the loudspeaker output level is precisely the same as that stored as the reference level.

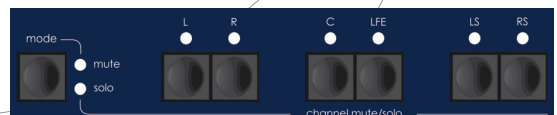
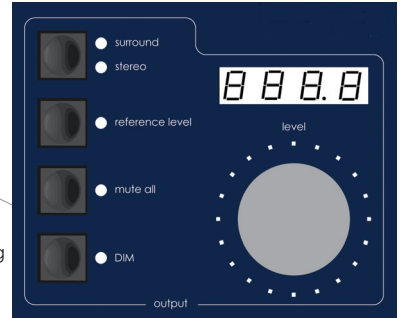
Depending on the configuration, the Rotary Level control may be disabled completely when the Reference Level mode is engaged (Auto Reference Level: Off). Alternatively, turning the Rotary Level control may deselect the Reference Level mode and restore manual adjustment (Auto Reference Level: On).

The Mute All button does exactly what it says! The associated LED lights and the 4-digit display fills with dashes (----). The button's LED flashes if Mute All is enabled via an external remote control command.

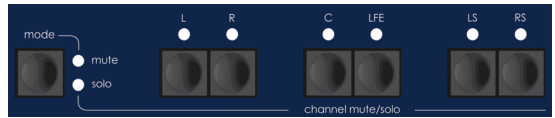
The Dim button reduces the monitoring level by a preset amount (the default is -20 dB). When Dim is engaged the 4-digit display indicates the revised loudspeaker output level, but if the dimmed level would be -96.0 dB or lower the outputs are automatically muted. The Dim button's LED lights when Dim is selected, and flashes if an external remote Dim command is active. Adjusting the Rotary Level control will cancel the Dim function automatically if engaged via the DMC's Dim button, but not if the Dim function is called by an external remote control command.

The Rotary Level control adjusts the surround and stereo loudspeaker output levels over a 70 dB range. The control resolution varies with the speed of rotation: when rotated slowly it provides 0.5 dB steps for precise adjustment, while faster rotation changes the level in larger steps for a more responsive action. If the level is set to -70 dB or lower, the outputs are automatically muted.

4. Channel Mute/Solo functions: The Mute/Solo mode button determines whether the six associated channel buttons serve as Mutes or Solos. Changing the Mute/Solo selection also clears any active mutes or solos, so pressing the button twice is a convenient way of clearing down all mutes/solos.



The selected Mute or Solo mode can be applied to any combination of channels by pressing the relevant channel Mute/Solo buttons; the associated LEDs indicate which channels are currently muted or soloed.



There are two solo modes: Normal Solo leaves the selected channel alone but mutes all the others, while the Solo Pop mode simultaneously increases the level of the soloed channel and partially attenuates all the other channels. The Solo Pop feature allows the soloed channel to be emphasised within the context of the full mix. The relative boost and attenuation levels are set during configuration, but the default is +6dB boost and -6dB attenuation. Normal Solo mode is indicated by the solo LED lighting steadily, while 'Solo Pop' mode is shown by the LED flashing instead. The 4-digit display also shows the word 'POP' as the normal level indication becomes irrelevant.

To switch between Normal Solo and Pop Solo modes, the Mute/Solo mode button must be held down and the Surround-To-Stereo button pressed simultaneously. While the mode button is pressed the LED above the Surround-To-Stereo button displays the current mode: LED on = Solo Pop mode, LED off = Normal Solo mode.

The Mute/Solo mode button is also used to select the A or B input delay (the default is 0ms for both). These delays are applied globally to all inputs and the function is intended to align the audio with a video display. Changing between the A and B delays requires the Mute/Solo mode button to be held down and the Stereo-To-Mono button pressed simultaneously. While the mode button is held down the Stereo-To-Mono LED indicates whether Input Delay A (LED off) or Input Delay B (LED on) is active, and the 4-digit display shows the corresponding delay time in milliseconds.

5. Display and Display Mode: The DMC's 4-digit display shows the surround or stereo loudspeaker level either as an amount of attenuation or the calibrated sound pressure level (SPL). These are both scaled in decibels, but when configured to display attenuation the output level is a negative number and includes a minus sign. A display of -40.5 indicates that the output is attenuated 40.5dB below the maximum possible level (0dB).


When configured to display the output level as an SPL value, the 4-digit display shows positive numbers between 70 and 100, representing the nominal sound pressure level in the control room. The SPL reference level must be calibrated via the configuration mode if the display is to relate accurately to the actual listening level in the control room.

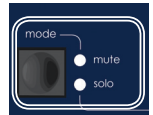
Configuration Modes

Entering Configuration Mode

To access the Configuration Mode, press and hold (for two seconds) the small recessed 'Configure' button on the back of the DMC Controller unit, which is adjacent to the D-sub connector. A pen or other pointed object may be needed. (The location of the button is highlighted with a white ring in the diagram below.)



When the system is in the Configuration Mode the mute and solo LEDs alongside the Mode button flash alternately, and all monitor speaker outputs are muted as a protective measure. The DMC's LEDs and buttons are now employed to indicate and change the various configuration parameters, but with so many options and so few buttons the configuration options are grouped into related functions and accessed by holding down a specific 'group-access' button. The 'hold-down' button is indicated with a  symbol in the following notes, and highlighted with an orange ring in the panel diagrams.




Exiting Configuration Mode

To exit Configuration Mode, store the current settings in non-volatile memory, and return the unit to normal operation, the rear-panel Configure button must be pressed and held again for two seconds.

Sync Source, Sync termination, Audio-synced-to-video sample rate, and Digital Output Modes

— To configure any of these options the **Stereo-to-Mono** must be held down —

 **Stereo-to-Mono for Access**

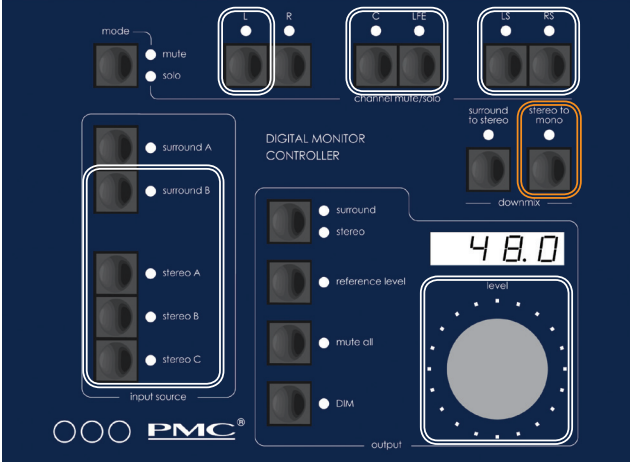
Input Selectors = **Sync Source**
 Surround B = Video
 Stereo A = DARS (AES11)
 Stereo B = Word-clock
 Stereo C = L/R of selected input

L Mute/solo = **Sync Termination**
 LED on = 75Ω Terminated

Rotary control = **A-V Sample Rate**

C/LFE Mute/solo = **Direct output Format**
 C = 75Ω/1Vpp, LFE = 110Ω/5Vpp

Ls/Rs mute/solo = **Loudspeaker Format**
 Ls = 75Ω/1Vpp, Rs = 110Ω/5Vpp



Sync Source: Four synchronisation options are provided. Three (word-clock, DARS, and video) are external sync reference inputs connected to the DMI's sync input BNC connector. The fourth option employs the embedded clock from the L/R channels of the currently selected surround or stereo digital audio input (this is the default condition). The required sync source is selected using the input source buttons:

Surround B = Video, Stereo A = DARS, Stereo B = Word-clock, Stereo C = Input L/R

Sync Input Termination: The external sync input circuitry can be terminated with 75Ω (default), or left unterminated (high-impedance). If the external sync source is connected directly to the DMI then the 75Ω termination should be selected, but if the sync source is 'daisy-chained' to other units the unterminated option may be more appropriate – only the last device in the chain should be terminated.

Sync termination is selected with the Left channel Mute/Solo button:

LED on = 75Ω termination, LED off = unterminated

Audio-Synced-to-Video Sample Rate: If a video sync signal is used as the DMI's timing reference the required sample rate of the DMI's digital audio output must be specified. In most cases the default value of 48 kHz will be appropriate, but rates from 32 to 192 kHz are available and set using the Rotary Level control. The selected rate is shown in the 4-digit display.

Loudspeaker Feed Connection Format: The source impedance and level of the digital outputs for the 5.1 and stereo loudspeaker feeds can be configured as a group. For standard balanced AES3 destinations, the 110Ω/5Vpp mode is appropriate (default), while the 75Ω/1Vpp mode is appropriate for unbalanced AES3-id or S/PDIF destinations. The Ls and Rs Mute/Solo buttons are used to change modes:

Ls LED on = 75Ω/1Vpp, Rs LED on = 110Ω/5Vpp

Direct output Connection Format: The source impedance and voltage of the 5.1 and stereo direct fixed-level digital outputs can also be configured as a group. The same 110Ω/5Vpp (default) and 75Ω/1Vpp options apply as above. The C and LFE Mute/Solo buttons are used to change modes:

C LED on = 75Ω/1Vpp, LFE LED on = 110Ω/5Vpp

Stereo-to-Mono for Access

Input Selectors = **Sync Source**

- Surround B = Video
- Stereo A = DARS (AES11)
- Stereo B = Word-clock
- Stereo C = L/R of selected input

L Mute/solo = **Sync Termination**

LED on = 75Ω Terminated

Rotary control = **A-V Sample Rate**

C/LFE Mute/solo = **Direct output Format**

C = 75Ω/1Vpp, LFE = 110Ω/5Vpp

Ls/Rs mute/solo = **Loudspeaker Format**

Ls = 75Ω/1Vpp, Rs = 110Ω/5Vpp



DMC Address, Stereo Input C SRC, and Stereo Loudspeaker Output Mode

— To configure any of these options the **Mute/Solo Mode** button must be held down —

Mute/Solo Mode for Access

Rotary control = **DMC Address**

L Mute/Solo = **Input C SRC on/off**

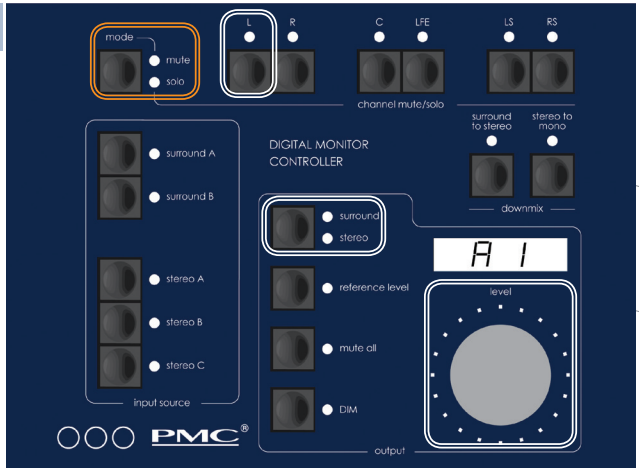
LED on = SRC enabled

LED off = SRC bypassed

Surround/Stereo = **Stereo Output Mode**

Surround LED = stereo output off

Stereo LED = Stereo output on



Device Address: The choices are A1 (default), A2, A3, and A4, and the selected device address must not conflict with that of any other connected Control Console. Turning the Rotary Level control changes the setting which is shown in the 4-digit display.

Stereo Input C Sample Rate Converter: A sample rate converter (SRC) is available for Stereo Input C to accommodate non-synchronous sources, and it is engaged by default. The acceptable input sample rate range can be between 1/6 and six-times the output sample – with an output sample rate of 48kHz the SRC range is from 8 to 216kHz. The SRC process imposes a fixed input-to-output (group) delay of approximately 1 millisecond. The SRC mode is selected with the Left channel Mute/Solo button:

LED on = SRC enabled, LED off = bypassed.

Stereo Loudspeaker Output Enable: The user can switch between surround and stereo loudspeakers as required by default, but where stereo loudspeakers are not connected to the system the corresponding output can be disabled, leaving only the surround loudspeaker outputs active. The stereo loudspeaker output is configured with the Surround/Stereo selector:

Surround LED on = No stereo output,

Stereo LED on = stereo output available.

Bass-Management Modes

— To configure any of these options the **Stereo Input C** button must be held down —

Stereo C for Access

C Mute/solo = **5.1 Bass-Management**

LED on = enabled

Ls Mute/solo = **Stereo Bass-Management**

LED on = enabled

Surround A/B = **Low-pass Filter**

A = 24dB/octave, B = 12dB/octave

Stereo A/B = **High Pass Filter**

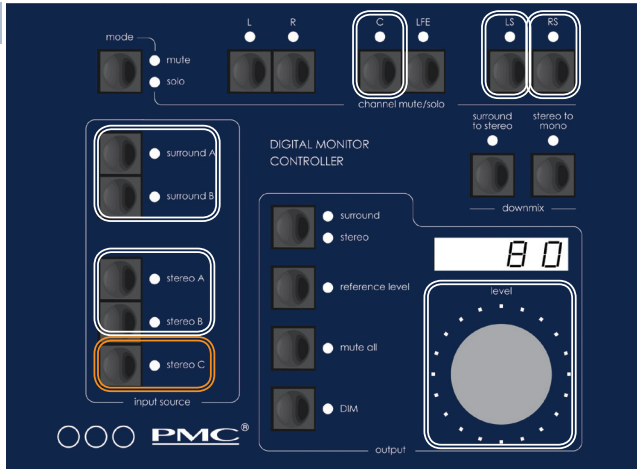
A = 24dB/octave, B = 12dB/octave

Rotary control = **Crossover Frequency**

Rs Mute/solo = **Mute/solo Mode**

LED on = after B-M

LED off = before B-M



Bass-Management: The PMC Digital Monitor Controller features flexible and transparent bass-management capabilities, stripping the low-frequency content from the main loudspeaker outputs and routing it (along with any LFE signals), to the subwoofer output. When bass-management is enabled the DMC can operate only at sample rates of 44.1, 48, 88.2, or 96kHz. Bass-management can be enabled independently for the surround and stereo loudspeaker outputs, but the default condition is disabled for both sets of outputs.

The C channel Mute/Solo button indicates and selects the bass-management status for the surround output:

LED on = bass-management active, LED off = disabled.

The Ls channel Mute/Solo button and LED does the same for the stereo output:

LED on = bass-management active, LED off = disabled.

The crossover point of the bass-management filters can be selected between 40, 50, 60, or 80Hz (80Hz is the default). The Rotary Level control is used to adjust the cross-over frequency, with the current setting shown in the 4-digit display.

The slopes of the low-pass and high-pass filters can be selected independently between 12dB/octave and 24dB/octave (default). The Surround Input A/B buttons control the low-pass filter:

Surround A LED on = 24dB/octave, Surround B LED on = 12dB/octave.

The Stereo Input A/B buttons do the same for the high-pass filter slopes:


Stereo A LED on = 24dB/octave, Stereo B LED on = 12dB/octave.

Mute/Solo Bass-Management Mode: The Mute/Solo functions can be configured to operate before or after the bass-management filters. The default setting operates before bass-management, and effectively controls the input channels. In this configuration a channel is soloed prior to the bass-management filters and so the soloed signal will be split so that any low-frequency content is sent to the subwoofer and higher frequencies to the appropriate monitor speaker. This mode is appropriate for almost all applications.

In the after bass-management mode the channel is soloed at the loudspeaker outputs, and soloing the left channel will therefore only audition the higher frequency content as any low bass, routed to the subwoofer by the bass-management, will be inaudible as the subwoofer is muted when the left channel is soloed.

The Rs channel Mute/Solo button selects the mode:

LED on = after bass-management, LED off = before bass management.

 **Stereo C for Access**

C Mute/solo = **5.1 Bass-Management**
LED on = enabled

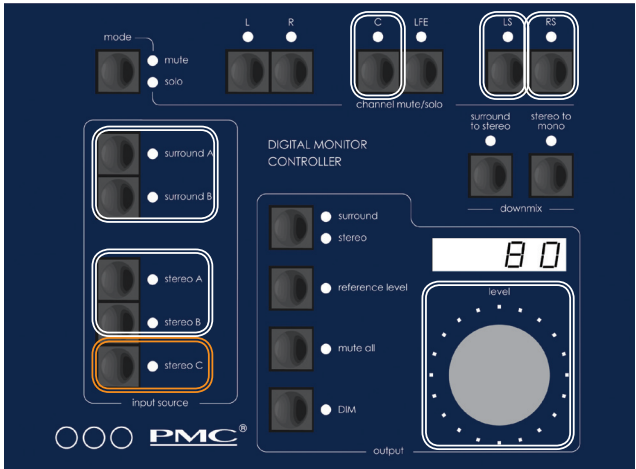
Ls Mute/solo = **Stereo Bass-Management**
LED on = enabled

Surround A/B = **Low-pass Filter**
A = 24dB/octave, B = 12dB/octave

Stereo A/B = **High Pass Filter**
A = 24dB/octave, B = 12dB/octave

Rotary control = **Crossover Frequency**

Rs Mute/solo = **Mute/solo Mode**
LED on = after B-M
LED off = before B-M



Level Display Mode, Reference Level, and Auto Reference Off

— To configure any of these options the **Mute All** button must be held down —

Mute All for Access

L/R Mute/Solo = **Display Mode**

L = Attenuation display

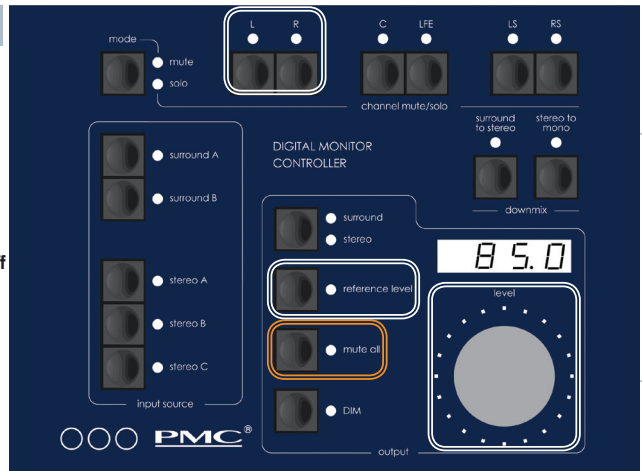
R = SPL Display

Rotary control = **Reference Level**

Reference Level = **Auto Reference Off**

LED on = enabled (rotary works)

LED off = disabled



Level Display: The DMC's 4-digit numeric display can be configured to show the loudspeaker output levels as a relative attenuation (default) or an absolute SPL value. In the attenuation mode the output level is shown in decibels below the maximum output level (0.0dB), allowing the monitoring level to be reduced to -70.0dB before the outputs are automatically muted.

The SPL mode is used in conjunction with the reference level configuration setting (see below). Once calibrated, the SPL mode indicates the nominal sound pressure level setting for the listening environment. The L and R channel Mute/Solo buttons are used to select the display mode.

Left channel LED on = attenuation display, Right channel LED on = SPL display.

Reference Level in dB SPL: This option allows a specific SPL value to be associated with the stored reference level (see below) so that the DMC's display shows the correct acoustic SPL. The dB SPL reference level can be set within a range from 70.0 to 100.0dB SPL (in 1.0dB steps). The film industry standard is 85dB_C, but other common reference SPL levels such as 75, 79, 82 and 87dB_C SPL can be accommodated. The Rotary Level control is used to adjust the reference level display, with the current value shown in the 4-digit display.

Auto Reference Level Off: When set to disabled (default), the Rotary Level control has no effect while the Reference Level mode is engaged. When 'auto reference level off' is enabled, adjusting the Rotary Level control automatically disengages the Reference Level setting. The mode is set with the Reference Level button.

LED on = enabled, LED off = disabled.

Mute All for Access

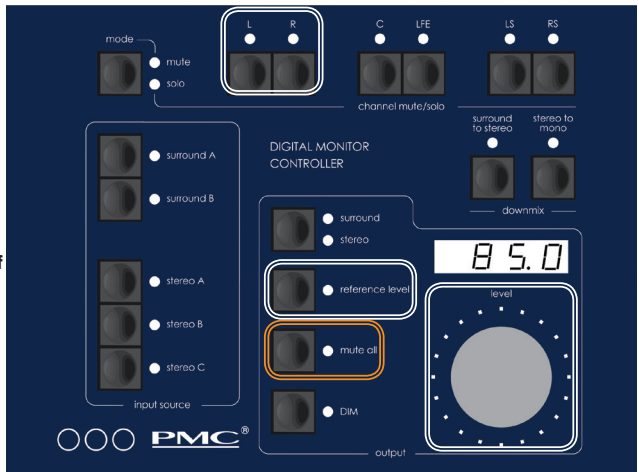
L/R Mute/Solo = **Display Mode**

- L = Attenuation display
- R = SPL Display

Rotary control = **Reference Level**

Reference Level = **Auto Reference Off**

- LED on = enabled (rotary works)
- LED off = disabled



Dim Level and Remote Commands

— To configure any of these options the **DIM** button must be held down —

Dim for Access

Surround B = **Dim -10dB**

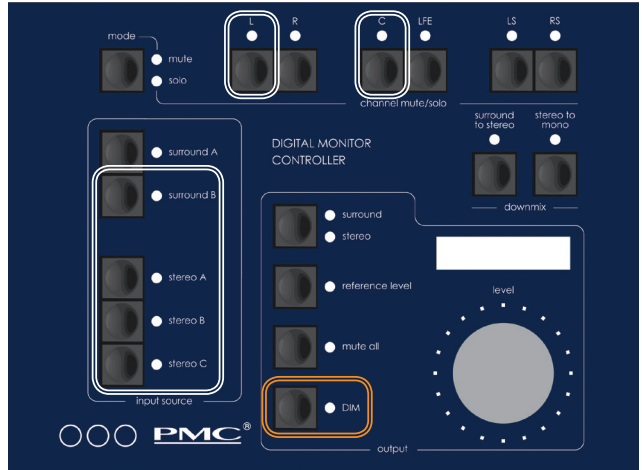
Stereo A = **Dim -15dB**

Stereo B = **Dim -20dB**

Stereo C = **Dim -25dB**

L Mute/solo = Remote Mute Enable
LED on = enabled

C Mute/solo = Remote Dim Enable
LED on = enabled



Dim Level: The Dim function is used to reduce the surround and stereo loudspeaker output levels by a preset amount. Four dim level values are available between -10 and -25dB (in 5dB increments). The default value is -20dB and the options are selected with the Input select buttons:

Surround B = -10dB, Stereo A = -15dB, Stereo Input B = -20dB, Stereo Input C = -25dB

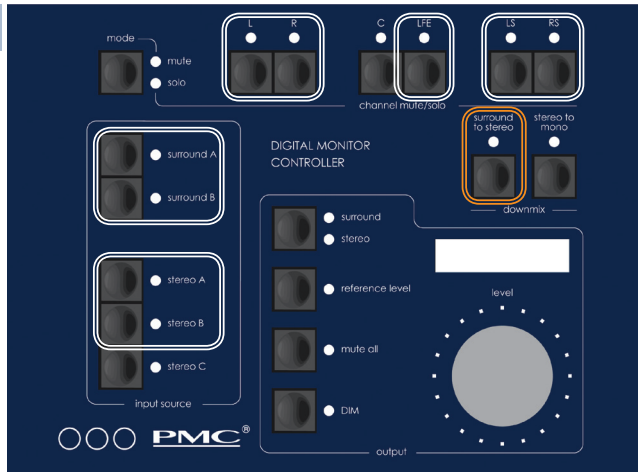
Remote Inputs: The external Remote Mute All and Remote Dim GPI inputs can be disabled (the default condition) or enabled independently using the L and C channel Mute/Solo buttons for the Mute and Dim functions respectively:

LED on = enabled, LED off = disabled.

Surround-to-Stereo Downmix levels and Direct Surround Output Mode

— To configure any of these options the **Surround-to-Stereo** button must be held down —

-  **Surround-to-Stereo for Access**
- Surround A/B = **L/R downmix level**
A = 0dB, B = -3dB
 - Stereo A/B = **Ls/Rs downmix level**
A = -3dB, B = -6dB
 - Ls/Rs Mute/solo = **C downmix level**
Ls = -3dB, Rs = -6dB
 - LFE Mute/solo = **LFE downmix level**
LED on = -6dB, LED off = Muted
 - L/R Mute Solo = **Direct Output mode**
L = pre-downmix
R = post-downmix



Surround-to-Stereo Downmix Levels: The Surround-To-Stereo downmix function is a useful aid for checking compatibility of surround (5.1) input signals with stereo and monaural playback environments. The default settings are suitable for most purposes, but they can be altered to comply with specific broadcast standards.

When the Surround-To-Stereo downmix function is active the direct paths from the left and right channel inputs to the corresponding left and right loudspeaker outputs are maintained, although the level can be reduced, if desired. By default, the L and R inputs are passed at unity gain, but they can be attenuated by 3dB if required using the Surround A and B input buttons:

Surround A LED on = L/R at 0dB, Surround B LED on = L/R at -3dB.

The two surround inputs are routed to the corresponding front channels (Ls to L, and Rs to R) and attenuated by 3dB as the default, or 6dB if preferred. The Stereo A and B input buttons configure the mode:

Stereo A LED on = Ls/Rs at -3dB, Stereo B LED on = Ls/Rs at -6dB.

The centre input is attenuated by 6dB by default (-3dB is an option), and routed equally to both the left and right loudspeaker outputs. The Ls and Rs channel Mute/Solo buttons are used to change options:

Ls LED on = C at -3dB, Rs LED on = C at -6dB.

By default, the LFE input channel is not included in the downmix at all, but an alternative option of mixing the LFE into the left and right loudspeaker outputs at -6dB is also available, controlled with the LFE channel Mute/Solo button:

LED on = LFE at -6dB, LED off = LFE muted.

NB: When the Surround-To-Stereo mode is active in normal operation, the centre (C), left surround (Ls), right surround (Rs), and subwoofer (SUB) loudspeaker outputs are muted, leaving only the front left (L) and right (R) loudspeakers active.

Direct (fixed-level) Surround Output Mode: The direct surround output can be derived before or after the downmix matrix. The default setting of pre-downmix ensures that the direct surround outputs are unaffected if the Surround-To-Stereo downmix mode is activated – which would be the preferred option if the direct outputs are being used as a dubbing feed, for example.

If the post-downmix mode is selected the direct surround outputs will reflect the downmix functions. This option would be appropriate if the direct outputs are connected to an external metering system, for example, since the impact of the downmix could then be visualised on the meters.

This mode is controlled via the L and R channel Mute/Solo buttons:

L Mute/Solo = pre-downmix, R Mute/Solo = post-downmix.

Surround-to-Stereo for Access

Surround A/B = **L/R** downmix level

A = 0dB, B = -3dB

Stereo A/B = **Ls/Rs** downmix level

A = -3dB, B = -6dB

Ls/Rs Mute/solo = **C** downmix level

Ls = -3dB, Rs = -6dB

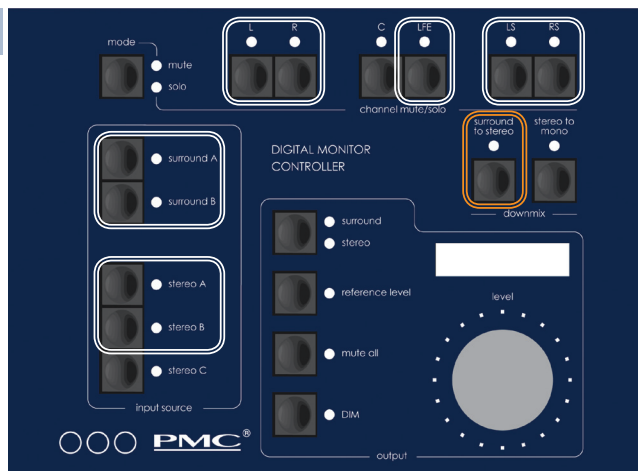
LFE Mute/solo = **LFE** downmix level

LED on = -6dB, LED off = Muted







L/R Mute Solo = **Direct Output mode**



L = pre-downmix

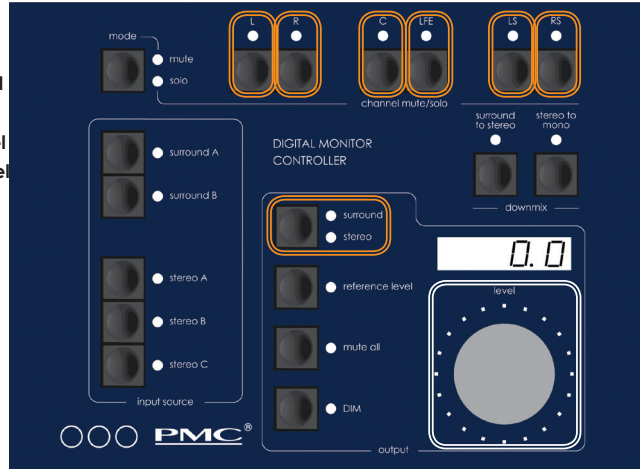
R = post-downmix



Loudspeaker Output Level Offsets

-  Mute/solo L = **5.1L speaker level**
 -  Mute/solo R = **5.1R speaker level**
 -  Mute/solo C = **5.1C speaker level**
 -  Mute/solo LFE = **5.1Sub level**
 -  Mute/solo Ls = **5.1Ls speaker level**
 -  Mute/solo Rs = **5.1Rs speaker level**
- Rotary control adjusts level*

-  Surround/Stereo + Mute/solo L = **Stereo L speaker level**
 -  Surround/Stereo + Mute/solo R = **Stereo R speaker level**
- Rotary control adjusts level*




Loudspeaker Output Level Offsets: The relative levels of the eight surround and stereo monitor loudspeaker output channels can be adjusted independently over a $\pm 12\text{dB}$ range (in 0.5dB steps). The default value is 0dB for all eight channels. During configuration the displayed value represents the level difference relative to the nominal (0dB) output level. Normally, the Centre channel for the surround speakers and the Left channel for the stereo speakers are taken as the references, remaining at the nominal 0dB output level setting, and the other channels are adjusted up or down, as required.


It's also possible to use DMC's output level offset capability to adjust the overall loudspeaker output levels to allow sensitivity matching between the separate stereo and surround monitor sets. Care should be exercised in adjusting the output levels to avoid compromising the dynamic range or noise floor.

The relative level for each output is adjusted using the Rotary Level control, and the current offset is shown in the 4-digit display. Each of the surround loudspeaker channels is adjusted by pressing and holding the corresponding Mute/Solo button while rotating the level control.


The output levels for the two stereo loudspeaker channels are adjusted by pressing and holding both the Surround/Stereo output button and the appropriate Left or Right channel Mute/Solo button, and then turning the Rotary Level control.


Input Delays, Pop Solo levels, Reference Level, and Reset Factory Defaults

 Stereo A = **Delay A value**


 Stereo B = **Delay B value**

Rotary control adjusts level

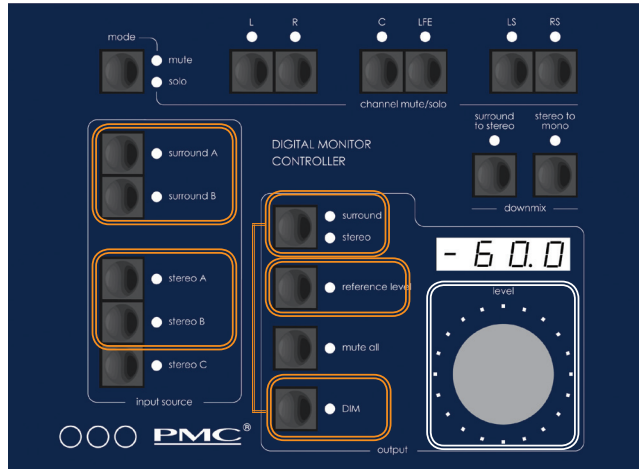
 Surround A = **Pop-level up**

 Surround B = **Pop-level down**

Rotary control adjusts level

 (5 seconds) **Reference Level**
= Reference Level calibration

 (5 seconds) **Factory Reset**
= Surround/stereo + Dim



Input Delay: The input signals can be delayed globally to synchronise the audio with delayed vision signals. (The default setting is 0ms). The delay range is 0 to 340 milliseconds (in 1-millisecond increments), when working at a 48kHz sample rate. For other sample rates the delay scales linearly – for example, at 96kHz the delay time range becomes 0 - 170ms, and a setting of '120' will provide a 60ms delay. Two different delay values (A and B) can be stored during configuration, and one or the other delay value is always active.


To set the A Delay, press and hold the Stereo A button input and turn the Rotary Level control to adjust the delay time. The 4-digit display shows the current value. The B Delay is set using the Stereo B input button in the same way.


Channel Pop Solo Mode Offset Levels: Two parameters are provided: The 'up-offset' level sets the amount of level boost applied to the soloed channel when the 'Pop Solo' mode is active. The 'down-offset' level sets the attenuation amount applied to the non-soloed channels at the same time. The boost range is 0-12dB (in 0.5dB increments), while the attenuation range is 0 to -12dB (again, in 0.5dB increments), plus mute. The default settings is +6dB and -6dB, respectively. The up-offset is adjusted by pressing and holding the Surround A input button and turning the Rotary Level control to adjust the value. The down-offset is adjusted by pressing and holding the Surround B input button in the same way.


Reference Level: In audio-for-picture applications a calibrated listening level is often a requirement, and the DMC allows a precise monitoring level to be stored and recalled as a Reference Level. (-60dB is the default). The calibration process is as follows:


1. Set up an SPL meter at the desired listening location and with the DMC in normal operating mode, ensure that the Dim, Mute All, Reference Level, and Downmix functions are not active.
2. Select the input source reproducing the desired reference signal source – typically pink noise with an average level of -20dBFS, and while observing the SPL meter adjust the DMC's Rotary level control until the desired loudspeaker level has been reached.
3. Being careful not to disturb the position of the Rotary Level control, enter Configuration Mode by pressing and holding the 'Configure' button on the DMC's rear panel. All monitor outputs will mute.
5. Press and hold the Reference Level button – the associated LED will flash for five seconds and then light steadily to indicate that a new reference level has been stored. Release the Reference Level button and the DMC's display will show the attenuation value of the new reference level.
6. Exit the Configuration Mode by pressing and holding the 'Configure' button for two seconds. The new reference level is stored in non-volatile memory. On exiting the Configuration Mode the monitor outputs will become active. Confirm that the correct level has been stored by pressing the reference level button. The SPL meter should display the desired level.


Restore Factory Defaults: This is accomplished by pressing and holding for five seconds simultaneously both the Dim and Surround/Stereo buttons. The LEDs on both buttons light to confirm the operation. Normal operation resumes after the buttons are released. Factory defaults are listed on page 13.

 Stereo A = **Delay A value**

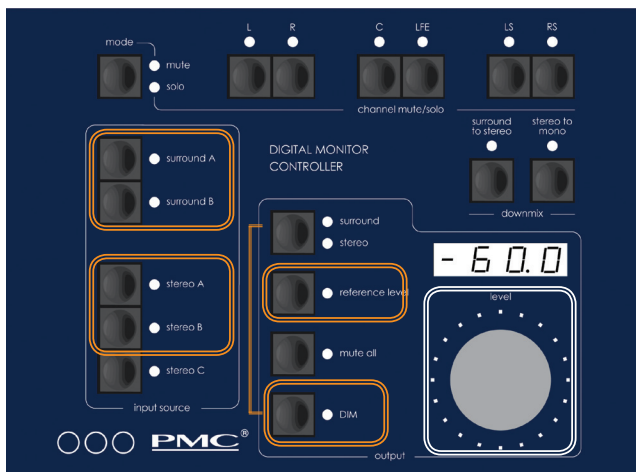
 Stereo B = **Delay B value**
Rotary control adjusts level

 Surround A = **Pop-level up**

 Surround B = **Pop-level down**
Rotary control adjusts level

 (5 seconds) **Reference Level**
= Reference Level calibration

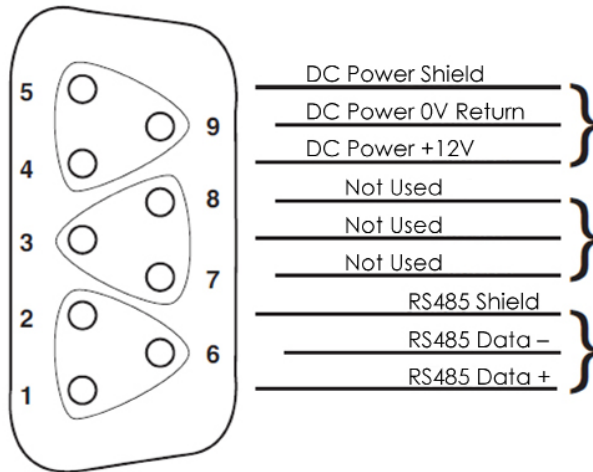
 (5 seconds) **Factory Reset**
= Surround/stereo + Dim



User Configuration Notes

RS485 DMC-DMI Cable Wiring Details

The DMC-DMI connecting cable has 9-pin D-sub male connectors (DE-9M) at both ends, with 4-40 threaded locking screws. The supplied cable is fully wired, but only four connections are actually required (1, 4, 6, 9), allowing 2-pair audio cable to be used in a bespoke installation.



The maximum cable length is determined by power losses, rather than data reliability issues. The RS485 format typically works up to about 300m, but the maximum DMC-DMI cable length is likely to be around 160 metres due to resistive power losses.

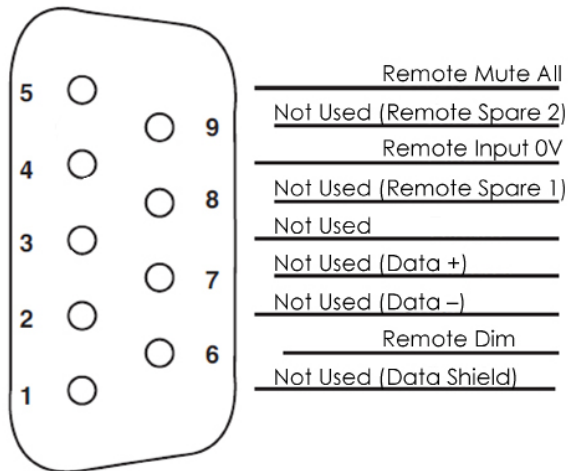
The DMI supplies 12VDC at up to 500mA, while the DMC requires a minimum of 9VDC and 100mA (measured at the DMC's 9-pin connector). So, the maximum permissible cable length is determined by the resistance of the power wires such that the voltage drop is less than 3V when 0.1mA is flowing. Using $V=IR$, the total DC power circuit resistance must therefore be less than 30 Ohms, and the resistance of an individual conductor less than 15 Ohms. Typical audio cables have a conductor resistance of around 90 Ohms/km, and so the maximum cable length is: $(15/90)*1000 = 166$ metres. Lower conductor resistance per kilometre (eg, with thicker gauge conductors) will permit a longer maximum cable length, and vice versa.

GPI Remote Control Input Wiring

The upper female 9-pin connector on the DMI unit accepts two separate external GPI control commands which affect the loudspeaker monitor outputs. The possible commands are: Mute all, and Monitor Dim.

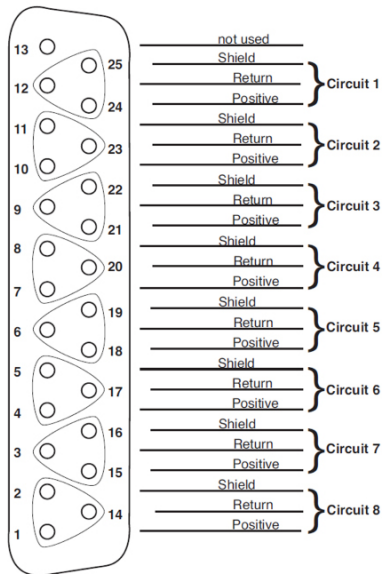
The interface uses standard TTL logic gates with a +5V pull-up voltage, and the remote commands become active only while the corresponding control line is held at the low logic state (ie, shorted to the system's 0V common).

The required cable connector is a standard 9-pin D-Sub male (DE-9M) with 4-40 threaded locking screws, and the wiring is as follows:



Digital Audio Output Connector Wiring

The output connector wiring scheme follows the AES59 (Tascam®) convention shown below. All digital outputs are transformer-coupled and configurable for either AES3 (balanced) or AES3-id (unbalanced) operation. The required mating connector is a DB-25(m) with 4-40 threaded screws.



Channel	Connections	High (+)	Low (-)	Shield
1	Direct (fixed level) 5.1 L/R	24	12	25
2	Direct (fixed level) 5.1 C/SUB	10	23	11
3	Direct (fixed level) 5.1 Ls/Rs	21	9	22
4	Stereo Input C (SRC output)	7	20	8
5	5.1 Loudspeaker Feed L/R	18	6	19
6	5.1 Loudspeaker Feed C/SUB	4	17	5
7	5.1 Loudspeaker Feed LS/RS	15	3	16
8	Stereo Loudspeaker Feed	1	14	2

Digital Monitor Interface (DMI) Unit

Supported Sample Rates: 32, 44.1, 48, 88.2, 96, 176.4, and 192 kHz (24 bits maximum).

Internal Processing: 32 bits Input-to-Output Latency: two samples (eg. 0.042 milliseconds @48 kHz).

Digital Audio Inputs: Five (18 audio channels configured as two surround (5.1) and three stereo).

Format: AES3-id/SMPTE 276M (Unbalanced 75 ohms/1Vpp) via BNC.

Configurable Input Delay: 0 to 340 milliseconds @48 kHz sample rate (scales with sample rate).

Sample Rate Conversion (SRC): Available on Stereo Input C.

Input C Sample Rate Range: 8 to 216 kHz (limited to 1/6 to 6 times the output sample rate).

Latency: 1 millisecond, nominal.

Sync Source: Configurable to follow L/R of currently selected input or external reference signal.

Sync Input: Word-clock or DARS (AES11), AES3-id, or bi-level and tri-level video. (Jitter: 4 ns pp max).

Accepted sample rates: 32, 44.1, 48, 88.2, 96, 176.4, or 192 kHz. Video rates listed in the table below.

Connector: BNC (per IEC 60169-8 Amendment 2). Termination: 75 ohms, selectable on/off.

NTSC B&B	PAL B&B			
525i/59.94 Hz	525p/59.94 Hz			
625i/50 Hz	625p/50 Hz			
720p/23.98 Hz	720p/24 Hz	720p/25 Hz	720p/29.97 Hz	720p/30 Hz
720p/50 Hz	720p/59.94 Hz	720p/60 Hz		
1035i/59.98 Hz	1035i/60 Hz			
1080i/50 Hz	1080i/59.94 Hz	1080i/60 Hz		
1080p/23.98 Hz	1080p/24 Hz	1080p/25 Hz	1080p/29.97 Hz	1080p/30 Hz
1080psf/23.98 Hz	1080psf/24 Hz			

Specifications

Digital Monitor Outputs: 16 (eight AES pairs) organised as two 5.1 and two stereo outputs.

Loudspeaker output level offsets: independently adjustable in 0.5dB steps over a ± 12 dB range.

Dynamic Range: >135 dB

Type: Configurable as AES3 (110 ohms/5 Vpp), or AES3id/SMPTE 276M (75 ohms/1 Vpp).

Connector: 25-pin D-subminiature female (DB-25F) with 4-40 threaded inserts.

Bass-Management: Supported Sample Rates: 44.1, 48, 88.2, and 96 kHz only.

Crossover Frequency: -6 dB @40, 50, 60, or 80 Hz.

Filters: Symmetrical low-pass and high-pass filters, maximally flat.

Filter Slope: 12 or 24dB/octave.

Bass-management can be applied independently to the surround and stereo loudspeaker outputs.

Downmix: Surround-To-Stereo and Stereo-To-Mono

Surround-To-Stereo: *(Only Left and Right outputs active)*

L and R at 0 or -3 dB.

C at -3 or -6 dB summed equally with L and R.

LFE at full attenuation or -6 dB summed equally with L and R.

LS and Rs at -3 or -6 dB summed individually with L or R, respectively.

C, Sub, Ls and Rs monitor outputs muted.

Stereo-To-Mono: *(Only Centre output active)*

L and R at -3 dB summed to C.

L, R, Ls, Rs, and Sub monitor outputs muted.

Note: For a surround input, the Stereo-To-Mono mode results in the Centre output being the sum of L, C and R at -3 or -6 dB, LFE at full attenuation or -6 dB; Ls and Rs at -6 or -9 dB.

Specifications

Remote Control Inputs: Remote mute all, Remote dim
(+5V logic, activates on short to system ground).

Connector: 9-pin D-subminiature female (DE-9F) with 4-40 threaded inserts

AC Mains: 100 to 230VAC, (+10/-15%) 50/60 Hz, 15W maximum

Connector: 3-pole, IEC 320 C14-compatible (mates with IEC 320 C13) Class 1 (earthed) Device

Dimensions: (WHD) 19.00 inches (48.3cm) x 1.72 inches (4.4cm) x 7.00 inches (17.8cm)

Standard 1U, 19-inch mounting

Weight: 6.2 pounds (2.8 kg)

Digital Monitor Controller (DMC) Unit

Power: 12 volts DC nominal (9 volts DC minimum), maximum current 100 milliamperes
Power provided via the control cable from the DMI

Control Data Format: Type: RS-485 at 115.2 kbit/s, 8-N-1

Polling Interval: 50 milliseconds

Connector: 9-pin D-subminiature female (DE-9F) with 4-40 threaded inserts

Dimensions: (WHD) 7.20 inches (18.3 cm) x 2.20 inches (5.6 cm) x 5.40 inches deep (13.7 cm)

Weight: 1.7 pounds (0.8 kg)

We are confident that your PMC **Digital Monitor Controller** will afford many years of trouble-free use. However, for any issues that might arise, or for advice and service requirements, the primary point of contact should be your authorised PMC dealer/distributor.

If you do not have a local representative please see www.pmc-speakers.com and click on 'distribution.'

Alternatively you can view the FAQ's (Frequently Asked Questions) and servicing section on our website. (Click on the 'contacts' section and select 'FAQ').



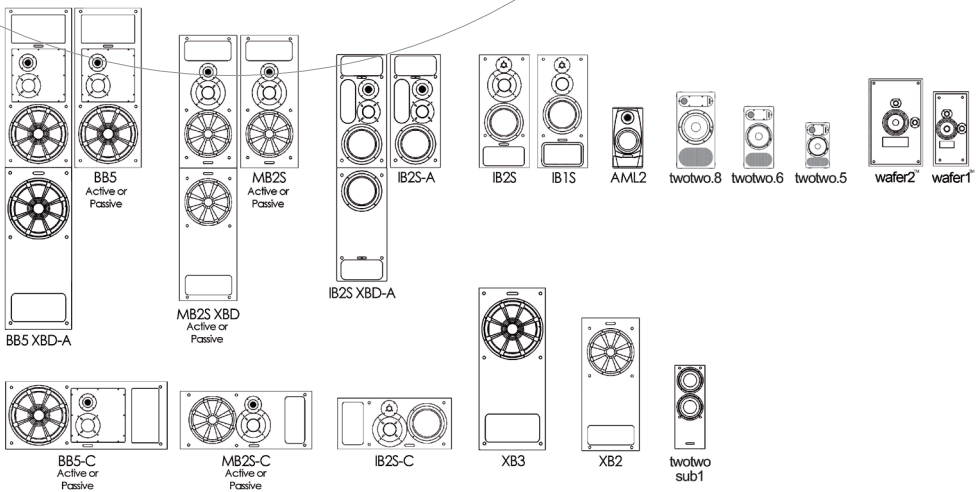
Important Note: Please do not return any products to PMC directly without first contacting our service department by email at service@promonitor.co.uk

The PMC Professional Range

The PMC range of professional monitor loudspeakers currently spans twenty-five different models, from the enormous BB5 XBD-A flagship system down to the diminutive twotwo.5 active monitor speaker.

Every monitor in PMC's range is designed with the same care and attention, using shared families of drive units, crossover designs, and amplifiers. As a direct consequence they all enjoy the same family characteristics of wide dispersion, low distortion, consistent voicing, and an even bass response regardless of listening level.

This consistency of design allows different sizes of monitors to be used in concert to create effective multichannel systems where space is at a premium.



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GO TO WWW.PMC-SPEAKERS.COM AND CLICK ON REGISTER PRODUCT



**If you do not have access to the Internet please fill in the
Warranty form on page 40, and post pages 41/42 to us.**

WARRANTY CERTIFICATE - PART 1

**Your copy
to keep**

Please complete and retain this page for your own records

Product

Serial No's

Date of purchase

Dealer's name

Dealer's address

Town

County

Postcode

Dealer's Telephone No.

Servicing and warranty issues – Please read the following carefully.

Non-UK clients

Contact your local dealer/distributor for the details of warranty repairs – see www.pmc-speakers.com and click on distribution for their details.

UK clients

In the unlikely event of a fault occurring with your PMC product please contact your dealer where the product was purchased.

Do not return a product to PMC without firstly contacting our technical department. If the product needs to be returned for service you will be issued with a Returns Authorisation number.

If a product is returned to PMC and subsequently is found to have no fault or a non-warranty fault there will be minimum charge of £50.00 plus the carriage for its return.

Proof of purchase is required for any claim covered by this warranty.

This product is warranted for a period of three years from the date of purchase or valid warranty registration which is either by receipt of the 'Our Copy' card or an on-line registration which must be made within ten days of purchase or receipt.

The warranty covers defects due to faulty materials or workmanship but does not cover defects arising from accidental damage, misuse or wear and tear. The warranty is void if any attempt has been made by persons not authorised by PMC to dismantle, repair or modify any part of the product.

Products must be returned using original packing material. This warranty does not cover damage in transit.

Note that the cost of the carriage to PMC is not covered by the warranty.

Returned products that are defective but no longer covered by warranty will be repaired or replaced at the discretion of PMC.

Please allow a minimum of 14 working days for return of warranty repairs.

This warranty does not affect your consumer rights under statutory law. This warranty certificate is only valid in the United Kingdom.

WARRANTY CERTIFICATE - PART 2

PMC's Copy

Please complete and return this section – or simply complete the on-line registration at www.pmc-speakers.com and click on 'register product.'

Help us to improve
our products.
See over



Help Us Improve. Your Comments?

We value all of our clients' comments. Please take a moment to help us improve:

If there is one thing we should change, what would it be?

Please tell us how your new PMC Digital Monitor Controller performs. Your comments may appear on the customer quotes section for this product on our website – but don't worry, the comments will be anonymous and personal details will not be published.

Which magazines do you read?

HiFi

- HiFi Choice
 What HiFi
 Stereophile
 HiFi World
 HiFi Critic
 HiFi News
 HiFi+
 Gramophone

Other

Pro

- Future Music
 Sound On Sound
 Audio Media
 Pro Sound News
 Resolution
 Audio Fanzine
 MusicTech
 Tape Op

Other

Lifestyle

- T3
 Stuff
 GQ
 Mens Health
 FHM
 Loaded
 Maxim
 Esquire

Other

On-Line

- mixonline.com
 gearslutz.com
 avreview.co.uk
 avforums.com
 HiFi WigWam.com
 What HiFi.com
 SoundonSound.com
 Musictech.net

Other

'We hope you enjoy your latest purchase as much as we enjoyed designing and building it – Thank you'

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The Professional Monitor Company Limited will not assume responsibility for errors that may appear in this document.

Information may be subject to change.



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