

P R I M A R E

THE SOUND AND VISION OF SCANDINAVIA

Design Brief - MM30 multimedia upgrade module for I32 and PRE32

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The MM30 multimedia upgrade module adapts the EISA award-winning I32 integrated amplifier and the PRE32 stereo preamplifier for audiophile streaming, internet radio, Bluetooth connection and gapless audio playback, through integration with UPnP devices such as PC/Mac/NAS iPod®, iPad®, iPhone® or USB thumb drive. It's a genuine 24/192 DAC board including coax, TOSLINK, USB-A and USB-B inputs (incorporating an asynchronous master clock for low jitter), and a high resolution (192 kHz) coax output.

Our definitions for File Based Audio:

Streaming: 'live' download for Internet radio and Music services like Spotify and playing music over a network from NAS or PC

Playback of Audio files: Playing music files directly from laptop or PC over a USB-B connection. This means using programs like iTunes (Amara) and JRIVER as user interface

Recommendations

- Use of a high quality wireless router
- Use of high quality CAT7 Cables
- Use of a switch between the Primare MM30, NP30 or PRE60 and computer or NAS
- Use of good quality files such as WAV, AIFF or FLAC-uncompressed
- Primare App is available for both iOS and Android. (iOS version supports Voice Over for visually impaired users)
- For High Res streaming LAN is needed
- WLAN: 802.11b, g, n; 2.4 GHz band; WPA, WPA2 security – Ethernet: 10/100 MBit/s – DHCP and AutoIP support
- Advantage of an asynchronous USB connection is that the clock, present in the DAC, controls the flow of audio data from the computer to avoid the imprecise clock used in the computer.
- Please use a high quality USB-B cable for connection and make sure to check your audio settings on your computer
- Also try the different USB connections on your laptop as they do sound different.
- Please make sure to download the PC audio driver from the SUPPORT section on our



website

- For playing music from PC over USB-B please download the Primare PCaudio driver from the SUPPORT page from www.primare.net
- From MAC it will play automatically over USB-B will give best sound quality from Spotify PREMIUM. (please set audio setting in Spotify to Extreme)
- Firmware updates can be done from the device's MENU or from Primare App

Supported Audio Formats

Codec	Channels	Samplerates in kHz	Sample format	Bitrate	Gapless	Restrictions
WAV	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48, 88.2, 96, 176.4, 192	Int: 8, 16, 24 Float: 32	n.a.	yes	samplerate > 48kHz not on WLAN
LPCM	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48, 88.2, 96, 176.4, 192	Int: 8, 16, 24	n.a.	yes	samplerate > 48kHz not on WLAN
AIFF	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48, 88.2, 96, 176.4, 192	Int: 8, 16, 24 Float: 32	n.a.	yes	samplerate > 48kHz not on WLAN
FLAC	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48, 88.2, 96, 176.4, 192	16/24	n.a.	yes	samplerate > 48kHz not on WLAN
ALAC	mono/ stereo	44.1, 48, 88.2, 96	16/24	n.a.	yes	
MP3	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48	n.a.	max 320kBit/s CBR/VBR	yes	gapless support needs LAME extensions in file header
MP4 (AAC)	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48	n.a.	max 400kBit/s CBR/VBR	yes	gapless support needs LAME extensions in file header
OGG Vorbis	mono/ stereo	16, 22.05, 32, 44.1, 48	n.a.	max 500kBit/s CBR/VBR	no	
WMA	mono/ stereo	8, 11.025, 16, 22.05, 32, 44.1, 48	n.a.	max 320kBit/s CBR/VBR	no	WMA9 only, no lossless or professional codec

Audiophile Topology

DAC upgrades from certain brands are known to interfere with the analogue output causing a noticeable deterioration in sound quality. Consistent with Primare design philosophy, the digital and analogue signal paths within the Primare media upgrade have their own dedicated ground planes - a design feature which protects the purity of the analogue signals.

24/192 USB Interface



For reliable 24/192 operation, Primare has chosen XMOS because it offers an integrated communication hub hosting the MCU. XMOS and Primare's developers in Sweden, have collaborated to optimize XMOS firmware for better performance from Primare's XMOS application. **Please note: 176.4kHz is not supported by XMOS on MM30 (176.4 is supported over network).**

DAC

The MM30 uses a SRC4392 sample rate converter in conjunction with a Burr Brown PCM1792 24/192 DAC, running continually at 24/192. Incoming data at rates other than 24/192 are up-sampled to 24/192 to ensure the optimal operation of the DAC.

Volume Control

The volume will be adjustable from MIN to the configured MAX setting on the I32/PRE32.

Primare Control App available for iPhone/iPad and Android.

The Primare App allows you to choose and play media (including Internet radio) at resolutions up to 24bit/192kHz from network shared music sources and storage through NP30, PRE60 and from I32 and PRE32 with installed MM30 board.

- Switch to the MEDIA input
- Use either the Primare App (for iPhone®/iPad®, or the Android version) or any generic UPnP App.
- Some features, like playing media from USB thumb drive, USB-connected iPhone, iPod®, iPad®, and playing vTuner, require the use of the Primare App.

Primare App will:

- Establish network connections and play from any network shared music source
- Play from USB-A, (stick, iPhone etc)
- Play files up to 24bit/192 kHz resolution
- Play internet radio (vTuner –<http://www.vtuner.com>)
- Display and save playlists
- Display format, bit rate and sample rate of the song playing
- Provide fast forward and back navigation of the song playing
- Provide volume control including default at start-up (fixed or variable on NP30)
- Allow source selection of devices connected to inputs of the I32, PRE32, PRE60 and NP30
- Allow the renaming of inputs on I32, PRE32 and PRE60
- Give the I32, PRE32, PRE60 or NP30 a name on the network
- Manage software updates on I32, PRE32, PRE60 and NP30
- For playing music from PC over USB-B please download the Primare PCaudio driver from the SUPPORT page from www.primare.net
- From MAC it will play automatically over USB-B will give best sound quality from Spotify PREMIUM. (please set audio setting in Spotify to Extreme)
- Firmware updates can be done from the device's MENU or from Primare App

Please download the guide here:

<http://www.primare.net/product.asp?ProductID=59&d=5&c=1>

Using a standard UPnP App

Any standard UPnP application on Android or iPhone/iPad can be used to access the streaming functionality. However, while UPnP will allow you to browse a media server with playlists, tracks, album-art and transport controls, some features are not available



(USB-drive, Ipod, Ipad, Iphone-USB devices). Also no radio is supported with a standard UPnP App.

Firmware upgrade

If a network connection is available, the NP30 can connect to a Primare server to download new firmware. The Primare App offers an auto-upgrade feature, which automatically notifies the user when an upgrade is available. Simply activate the upgrade from the App. New Firmware can also be upgraded using a USB flash memory.

Inputs selectable from I32 and PRE32

Each input will have its default name, but can be renamed by the user (up to six characters) in the same way as any other input in the I32/PRE32 display architecture. The inputs are selected using the C24 remote control or the front panel input selector switch.

- Coax input
- Toslink 1-3
- USB-B input (from computer USB interface)
- USB-A input, allowing the device to play audio from USB/Iphone
- MEDIA input –this input must be selected to play streaming media.

Bluetooth

For compatibility with Primare's high-performance audio design, the Bluetooth receiver-only module supports high quality Bluetooth via aptX (android), AAC, MP3 but rather than use an integrated DAC (as employed by other Bluetooth upgrades) the output is fed to the product's own Sample Rate Converter and up-sampled to 192kHz for optimum performance through the existing high resolution DACs. In this way Primare's Bluetooth the MM30 provides excellent Bluetooth sound quality to the convenience of wireless Bluetooth connections.

Product features

- Support aptX (android), AAC, MP3 for high quality Bluetooth audio.
- The upgrade comes with an external antenna for better reception.
- The Primare BT Upgrade is a receiver only. The incoming signal is fed to the product's SRC, is up-sampled to 192kHz and then runs through the product's high performance DACs.
- Installation is easy; software update is through the PrimareApp or from the MENU.
- BT input is added to the product MENU, BT-input name and Bluetooth name are editable



MM30 Features and Specifications



Audio formats: WAV, LPCM, AIFF, FLAC, ALAC, MP3, MP4 (AAC), WMA, OGG,
Sample rates: 32-192kHz
WLAN: b, g, n mode; WEP (64 and 128Bit), WPA & WPA2 (TKIP & AES)
Connections output Digital (192 kHz)
Connections input 3x optical (96kHz)
1x SPDIF (192kHz)
USB-A
USB-B (192kHz)
WLAN (48kHz)
LAN (192kHz)

