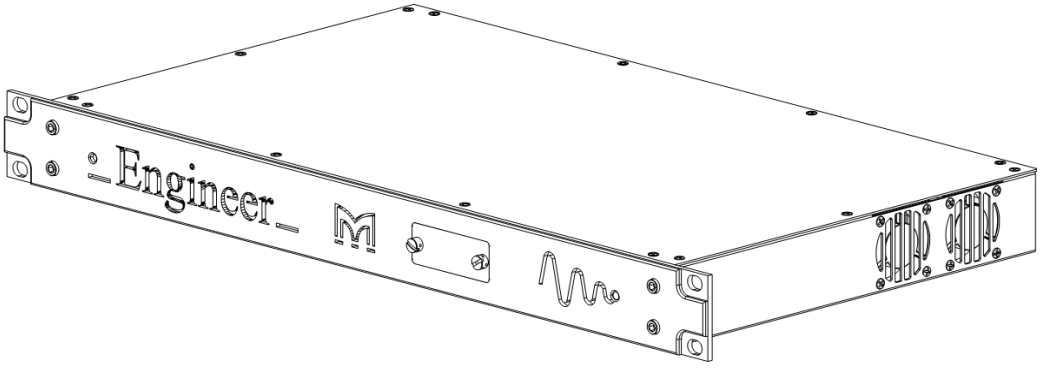
Engineer preset and zoning communications

protocol for Engineer 818 v1.0



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1. Introduction

This document describes a part of the communications protocol used on the Martin Audio 818 v1.0. With this document in hand, installation technicians should be able to:

- Recall presets
- Set the master- and zonegains

Implementation of this protocol should only be done by profesional installation engineers. **Improper use can result in device instability or, ultimately, device crashes.** In this case, the firmware will have to be flashed which will result in the loss of the project stored in the Engineer.

For this reason, it's recommended to **backup your data** before trying your protocol implementation. You can do this from the Engineer control software, using a full downsync. Save the result to a file. If anything goes wrong, try uploading this file into the device. For more information, please consult the official Engineer software manual.

2. Connecting to the Engineer

The protocol described in this document can be used for both the RS232 (front) and RS485 (back) connections on the device. Communication with the device is established with the following settings:

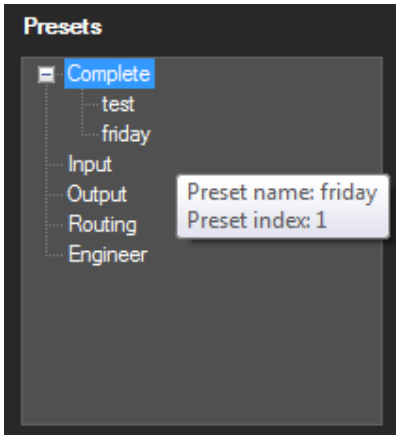
- Baud rate: 19200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Handshaking: RTS during send

Note that the RTS pin should be set to “on” a few milliseconds prior to the actual communication. **Always reset this pin to “off” when communication isn't taking place!**

3. Recalling presets

Preset recalls work on an index basis. This means you'll need to know the preset number you want to recall. You can check out the index that goes with each preset using the Engineer control software's presetmanagent window:

Downsync your project first, then hover your mouse for about 3 seconds over any preset in the preset manager. The index will then be shown in the preset information.



The preset index used in previous versions of this protocol has now been deprecated: The preset type will be automatically selected by the engineer when recalled. Therefore we can use a value of 0 for this parameter.

Now that you have these two parameters you can construct the information package required to recall a preset. This package has the following syntax:

Byte index	0	1	2	3	4	5
Data	254	14	Preset index	0	255	Checksum

The “checksum” field's purpose is to ensure no data is lost during transmission. It's defined as follows:

Checksum = (254 + 14 + preset index + preset type) & 127

The “&” character in this calculation is a “binary AND” operation. If this calculation exceeds the range of one byte (when the value's exceeds 255), the most signifcant bit is discarded.

An example: If we would want to recall a preset at index 2, the checksum would be:

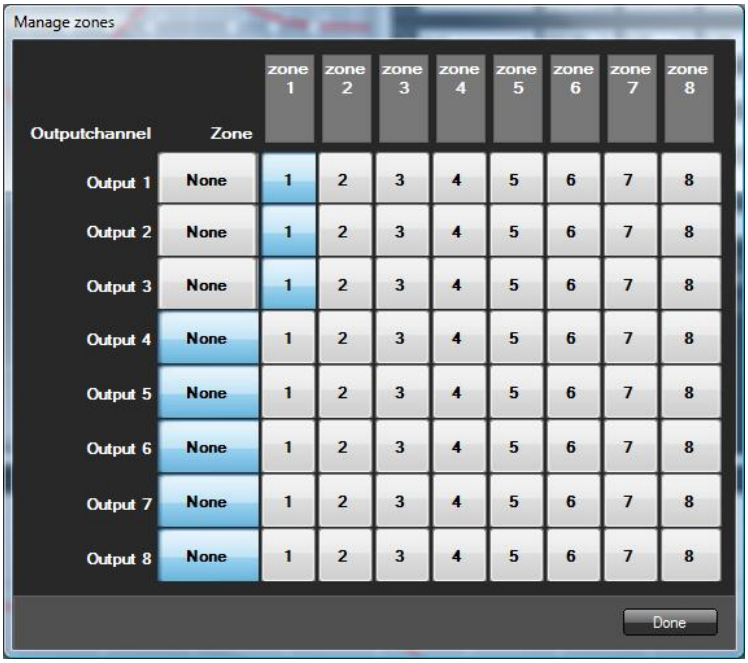
254 + 14 + 0 + 0 = 268
checksum = 270 & 127 = 12

To recall this preset we would now do the following:

- Open a connection to the device
- Set the RTS pen
- Wait for 10 ms
- Send package 254 14 0 0 255 12
- Reset the RTS pin

4. Setting master- and zone volumes

Zonevolumes can also be set using their respective index. As with the preset recalls, you can determine which zone corresponds to a certain index from the Engineer control software:



In this example zone 1 is named “zone 1” and has outputs 1, 2 and 3 assigned to it. Zones are indexed from 136: Zone 1 corresponds to index 136, zone 8 corresponds to index 144. The master volume's index is 84. These indices are referred to as “node-index”.

Gain values in the Engineer are indexed from -45 dB to +15 dB in steps of a quarter of a dB:

Index	0	1	2	....	180	...	239	240
Gain [dB]	-45.00	-44.75	-44.50		0 dB		+14.75	+15.00

The third variable in our information package is the checksum, which is defined in the same way as described above: The sum of bytes 0 to 3 combined with a binary AND calculation with 127.

The gain information package is defined as follows:

Byte index	0	1	2	3	4	5
Data	254	12	Node index	Gain idex	255	Checksum

Again, an example. If we want to set the gain for “Zone 1” (defined as “My test” in the screenshot above) to -2 dB, we construct our package as follows:

Node index for zone 1 = 136
Gain index for -2 dB = 172

Checksum calculation:
 254 + 12 + 136 + 172 = 574
Checksum = 574 & 127 = 62

To set the volume for zone “My test” to -2 dB we would now do the following:

- Open a connection to the device
- Set the RTS pen
- Wait for 10 ms
- Send package 254 12 136 172 255 62
- Reset the RTS pin