Remote Device Management (RDM)

Remote Device Management is a protocol that allows bi-directional communication between a grandMA3 device and RDM-ready devices attached to it (= RDM-ready fixtures) over a standard DMX line. ANSI E1.20 - 2010 by PLASA specifies the RDM standard as an extension of the DMX 512-A protocol (ANSI E1.11).

Manual settings, such as adjusting the DMX starting address, are no longer needed. This is especially useful for devices installed in a remote area.

RDM is integrated in DMX without influencing the connections. The RDM data is transmitted via the standard XLR-poles – new DMX cables are not required. RDM-ready and conventional DMX devices can be operated in one DMX line. The RDM protocol sends its own data packages in the DMX512 data feed and does not influence conventional devices.

To be able to use RDM, RDM has to be enabled at two different spots:

1. Globally within the show file. To do so, tap RDM in Menu - Network Menu, or tap RDM in Menu - Live Patch - RDM.
2. Per XLR port that shall use RDM. Therefore, the mode of an XLR port in the Output Configuration needs to be set from Out to RDM.

In RDM mode, DMX data is only sent when there are changes of DMX values. In addition, every 500ms a refreshing packet will be sent so that DMX fixtures will not switch into DMX fail mode.
This RDM output mode allows more time on the DMX line for RDM configuration.

The new RDM Devices window lists all devices that are discovered via RDM. It can be opened via the Add Window dialog and is located in the More -tab.
The same list is also displayed in Menu - Live Patch - RDM.

When an RDM fixture is detected on an XLR port, a new node called RDMPort will be added to the RDM devices list. Within each RDMPort node, all fixtures that are detected via RDM on this physical XLR port are listed. An RDM port is labeled with the IP of the device and the XLR port of the device, e.g., 192.168.0.4 - XLR D. If the device is not available anymore with the port, the font color turns red.
For each different fixture type, detected per RDM, a new node in the RDMFixtureTypes node in the RDM Devices window will be created. Each RDMFixtureType contains general information of the RDM fixtures, that is similar to all fixtures of the same product, e.g., the parameter description, or the available DMX personalities.

The grandMA3 creates RDMFixtureTypes by itself depending on these three parameters: ManufacturerID, DeviceModelID, and SoftwareID.
As soon as the same physical type of lighting fixtures have different software IDs due to different firmware versions, different RDMFixtureTypes are created.

This first implementation of RDM supports these RDM parameters, which can be set by the user:

- IDENTIFY_DEVICE, 0x1000
- DEVICE_LABEL, 0x0082

- DMX_PERSONALITY, 0x00E0
- DMX_START_ADDRESS, 0x00F0
- PAN_INVERT, 0x0600
- TILT_INVERT, 0x0601
- DISPLAY_INVERT 0x0500
- DISPLAY_LEVEL 0x0501
- RESET_DEVICE 0x1001
- FACTORY_DEFAULTS 0x0090
- LAMP_STATE 0x0403

Only the cells of properties that an RDM fixture provides as set-able can be edited in the RDM devices window.

In grandMA3 the RDM communication follows this process:

1. Discovery for new RDM fixtures.
    1. Check if detected fixtures are still available.
    2. Check for new RDM fixtures.
2. Get parameter and sensor data.
3. 1s Pause
4. Start again at 1.

Parameters that are not changing during the runtime of a fixture, e.g., Device Info, are only pulled via RDM once when creating the corresponding RDMFixtureType. All other parameters and sensors are pulled every time in step 2.
As soon as an RDM fixture is not available for 3 discoveries in a row, it will be displayed in red in the list of RDM fixtures.

It is possible to match an RDM fixture with a fixture of the grandMA3 patch. To do so, edit the fixture cell of the desired RDM fixture in the RDM devices window. A pop-up opens and offers all fixtures of the current show file.
In addition, it is also possible to match fixtures within the RDM window in the live patch. In the live patch, it is possible to open the fixture list in the same way as described above, and by selecting any cell of a fixture then tapping Match at the bottom of the window.
To remove a match between an RDM fixture and a grandMA3 fixture, it is possible to tap Unmatch in the RDM window in the live patch or to tap Clear in the match pop-up.