**Mestra**

Generic Requirements

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# History

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|  |  |
| --- | --- |
| **Date/period** | **Actions** |
| Nov 8, 2017 | Initial version |

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# Introduction

This document describes the generic requirements and requirements between different components.

# Naming of Requirements

The following shows the abbreviations of the requirements used in all documents.

Note that each requirement has a number 00-99 (and can be subdivided further). Also Requirements can be denoted as e.g. GenHx, for all Generic hardware requirements.

Table : Chapter Division

|  |  |
| --- | --- |
| Abbr | Name |
| Gen | Generic requirements |
| GenH | Generic hardware requirements |
| GenS | Generic software requirements |
| App | (External Computer) Application requirements (only software) |
| ConG | Controller generic requirements |
| ConH | Controller hardware requirements |
| ConS | Controller software requirements |
| AudG | Audio generic requirements |
| AudH | Audio hardware requirements |
| AudS | Audio software requirements |
| DmxG | DMX generic requirements |
| DmxH | DMX hardware requirements |
| DmxS | DMX software requirements |
| DpdG | Drum Pads generic requirements |
| DpdH | Drum Pads hardware requirements |
| DpdS | Drum Pads software requirements |
| DtrH | Drums Trigger hardware requirements |
| DtrS | Drums Trigger software requirements |
| DtrG | Drums Trigger generic requirements |
| DmxH | DMX hardware requirements |
| GuiG | GUI generic requirements |
| GuiH | GUI hardware requirements |
| GuiS | GUI software requirements |
| MicG | Microphones generic requirements |
| MicH | Microphones hardware requirements |
| MicS | Microphones software requirements |
| MidG | MIDI generic requirements |
| MidH | MIDI hardware requirements |
| MidS | MIDI software requirements |
| PdsG | Pedals/switches generic requirements |
| PdsH | Pedals/switches hardware requirements |
| PdsS | Pedals/switches software requirements |
| PrxG | Proximity generic requirements |
| PrxH | Proximity hardware requirements |
| PrxS | Proximity software requirements |
| RemG | Remote generic requirements |
| RemH | Remote hardware requirements |
| RemS | Remote software requirements |
| UmiG | USB MIDI generic requirements |
| UmiH | USB MIDI hardware requirements |
| UmiS | USB MIDI software requirements |
| DbgG | Debug generic requirements |
| DbgH | Debug hardware requirements |
| DbgS | Debug software requirements |

# Requirements

## Generic Requirements

Table : Requirements G

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID** | **Base ID** | **Version** | **Category** | **Item** | **Description** |
| Gen1 | - | 1.0 | Performance | Latency | Latency between a received message and sent (processed) messages related to the received message should not be more than 15 ms.  *Rationale: Studies are somewhat unclear, but generally a 15 ms latency is at the limit of what is musically noticeable.* |
| Gen2 | - | 1.0 | Performance | Startup | Startup of the system (in a typical setting) should take not more than 10 seconds.  *Rationale: Users do not expect startup times of ‘small’ devices to take long. In case of problems, resetting should be fast.* |
| Gen10 | - | 1.0 | Diagnostics | Error | Whenever an error occurs, the user will have enough information to find the root cause.  *Rationale: Error feedback is needed to solve a problem.* |
| Gen20 | - | 1.0 | Communication | - | The communication between all devices will be similar (both hardware/software). |

## Generic Hardware Requirements

Table : Requirements GH

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Base ID** | | **Version** | **Category** | **Item** | **Description** |
| GenH2 | - | | 1.0 | Power | Voltage | All components in the devices use a maximum of 5V.  *Rationale: Internally, 5 V->3.3 V adapters are used if needed.* |
| GenH3 | - | | 1.0 | Power | Current | 1A is the maximum current usage per device.  *Rationale: A default Arduino board powered by USB uses 0.5 A, most adapters are 1.0 A.* |
| GenH4 | - | | 1.0 | Power | Amount | The amount of power sources should be preferably 1 for all devices. *Rationale: in a typical setup, the least adapters, the best.*  **NOT MET** |
| GenH20 | Gen20 | | 1.0 | Communication | Hardware | The hardware communication will be equal for all devices (like either cabled or wireless like RF). |
| GenH10 | | - | 1.0 | Cost | Low | The cost of a single device should not exceed 25 euro (of component costs). |
| GenH20 | | - | 1.0 | Enclosure | Size | The enclosure size should not exceed 15 cm x 10 cm x 5 cm for all devices.  *Rationale: the devices will be placed on keyboards or put within limited space. Also, multiple devices will be used.* |
| GenH30 | | - | 1.0 | Safety | Damage | Connected devices should not damage the Mestra device.  *Rationale: Different devices can be connected.* |