Book of JaSON

MotMaster2 & Axel-Hub control commands format

[default.value] if the param is missing
file extension: .mme
++
General format

```
{   "MMexec": <description/title>, - it could be empty but it is not optional

    "sender": <sender/hub>, e.g. [local], Axel-hub... the location results will be sent to, if omitted – local (inside one app)
Currently, the legit names are Axel-hub, Axel-probe and MotMaster

    "cmd": <command> e.g. set, repeat, scan, load, save

    "id": <command.id> - unique integer number for remote control message back; -1 or omitted for local/internal call, positive number obligatory for remote access

    "prms": { - list.of.parameters, depending of the command
              <param1>: <value1> ,
             <param2>: <value2> ,
             <param3>: [ <array.param> ] ,
            ...
              }
}

{ "MMbatch": [

  { "MMexec":
    ...

  },

  { "MMexec":
    ...

  }
] }
```

Specific commands within the general MMexec format:

===============

```
{
     "MMexec": <caption>,
     "link": <filename>   --  the file must be in same folder and NOT containing links of its own
}
```

```
{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "message",
    "prms": {
            "text": <string> ,    -- normal color – dark-orange, if starts with Error - red
            "error": <int>  -- error code (optional)
            }
```

```
{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "set",
    "id": <command.id>,
    "prms": {
            <param1>: <value1> ,
            <param2>: <value2> ,
            ...
            }
}
```

```
{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "load",
    "id": <command.id>,
    "prms": {
         "file": <full.path>
         }
}
```

```
{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "save",
    "id": <command.id>,
    "prms": {
         "file": <full.path>
         }
}
```

```
{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "repeat",
    "id": <command.id>,
    "prms": {
          "groupID": <group.ID>,  -- the following shotData's will have the same groupID
         "cycles": <int.num>,  -- if missing or <1, eternal cycling is assumed
         "strobes": <int.num>,  -- 1 or 2 , number of strobes mode  (optional - jumbo)
```

```
            "strobe1": <double.num>,  -- the position (phase) of the left strobe (optional - jumbo)
            "strobe2": <double.num>  -- the position (phase) of the right strobe (optional - jumbo)
            }
}

{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "scan",
    "id": <command.id>,
    "prms": {
             "groupID": <group.ID>,  -- the following shotData's will have the same groupID
            "param": <name>,
            "from": <double.num>,
            "to": <double.num>,
            "by": <double.num>
            }
}

{
    "MMexec": <caption>,
    "sender": <sender/hub>,
    "cmd": "abort",
    "id": <command.id>,
    "prms": {
"groupID": <group.ID>  -- optional, the groupID which is been canceled.
                }
}
```

^^^

```
{
    "MMexec": <caption>,
    "sender": "MOTMaster" ,
    "cmd": "shotConfig",
    "id": <command.id>,
    "prms": {
               "period": <double.num>,   --  set sampling period to the charts in AxelHub
       "params":{
                   <param1>: <value1> ,
                   <param2>: <value2> ,
                   ...
                    }
}
}

{
    "MMexec": <caption>,
    "sender": "AxelHub" ,
    "cmd": "phaseAdjust",
    "id": <command.id>,
    "prms": {
     "phaseCorrection":<double.num>
              }
}

{
    "MMexec": <caption>,
    "sender": "MOTMaster" ,
    "cmd": "shotData",
    "id": <command.id>,
    "prms": {
            "groupID": <group.ID>,
            "runID": <int.num>,
            "N2": [x0,x1,…,xn],
  "NTot":[x0,x1,…,xn],
   "B2": [x0,x1,…,xn],
           "BTot":[x0,x1,…,xn],
   "Bg": [x0,x1,…,xn],
   "last":1  -- the last shot in series (optional)
  }
}
```

In initial configuration MOTmaster (MM) will have the initiative and Axel-Hub (AH) will be in a slave position, to do stuff when asked.
With time more and more of the operations will be moved to AH and at the end the AH will be the front end and MM will be mostly hidden.

Here is the initial configuration:

1. MM is used to optimize the signal with some measure of degree of optimization and stability (reproducibility)
2. MM starts phase scan from menu, before the actual scan, a Scan command is send to AH to let it know
3. During the scan the data from each shot is sent to AH for processing, visualization and logging – last two are optional.
4. MM starts repeat procedure from menu. Before that it sends Repeat and shotConfig (with the whole set of params) commands to AH.
5. During the repeat, one cycle will contain:

5.1 shotConfig from MM to AH with any changes of the original configuration (typically the phase).
5.2 the data (N2/N12) from MM to AH for processing, visual, & log - shotData command.

5.3 After PID processing, phase value is back from AH to MM in phaseConvert command.

5.4 After each shot the maximum of the fringe is calculated and that position (phase) together with MEMS acceleration number are used to calculate the "real" acceleration.

Three functional modes of communication:

1. Scan
2. Repeat
3. Free – ungrouped shotData or grouped but no title (scan/repeat) command

For the first two groupID is the common factor from title command scan/repeat thru all the shotData.