NegevSat – Programmer’s Reference Manual (PRM)

**NegevSat satellite supports the following commands from the ground station (can be found in** data\_protocol/CMDDictionary.hpp**):**

#define MOVE\_TO\_SAFE 1

#define MOVE\_TO\_STANDBY 2

#define MOVE\_TO\_OP 3

#define FORMAT\_ENERGY 4

#define FORMAT\_TEMP 5

#define FORMAT\_STATIC 6

#define FORMAT\_MIXED 7

#define SBAND\_ON 8

#define SBAND\_ STANDBY 9

#define PAYLOAD\_ON 10

#define PAYLOAD\_ STANDBY 11

#define THERMAL\_CRTL\_ON 12

#define THERMAL\_CRTL\_ STANDBY 13

**MOVE\_TO\_SAFE**  Switches satellites state to SAFE\_MODE.

**MOVE\_TO\_STANDBY**  Switches satellites state to STANDBY.

**MOVE\_TO\_OP** Switches satellites state to OPERATIONAL.

**FORMAT\_ENERGY** Changes satellites sending format to Energy, now the satellite will send 10 Energy packets and 1 Static.

**FORMAT\_TEMP** Changes satellites sending format to Temperature, now the satellite will send 10 Temperature packets and 1 Static.

**FORMAT\_STATIC** Changes satellites sending format to Static, now the satellite will send only Static packets.

**FORMAT\_MIXED** Changes satellites sending format to Mixed, now the satellite will send Energy, Temperature and Static packets, one after another.

**SBAND\_ON** Satellite turns on the SBAND module.

**SBAND\_STANDBY**  Satellite turns off the SBAND module.

**PAYLOAD\_ON** Satellite turns on the PAYLOAD (Camera) module.

**PAYLOAD\_ STANDBY** Satellite turns off the PAYLOAD (Camera) module.

**THERMAL\_CTRL\_ON** Satellite turns on the THERMAL\_CTRL module.

**THERMAL\_CTRL\_ STANDBY** Satellite turns off the THERMAL\_CTRL module.

**NegevSat satellite has 6 modules:**

* SBAND module
* TEMPERATURE module
* ENERGY module
* SOLAR PANELS module
* PAYLOAD module (Camera)
* THERMAL CTRL module

**Each NegevSat module can be in the following state:**

* **ON** – The module is in proper state and works as expected. **Green**
* **MALFUNCTION** – The module is operating but there is a possibility that there is a problem with the module, further actions should be taken. **Yellow**
* **STANDBY** – The module has turned off most of unnecessary parts, mostly will happened for Energy saving. **Orange**
* **NON\_OPERATIONAL** – The module is turned off as a result of a failure. **Red**

**There are three kinds of packets which the satellite can send:**

**Static Packet:** contains satellite’s state machine’s current state, state of each Module and timestamps.

**For example:**



**Energy Packet:** contains satellite’s Energy data: voltage and current of the butteries and timestamps.

**For example:**

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**Temp Packet:** contains satellite’s sensors Temperature data and timestamps.

**For example:**

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