



NEWSLETTER-AMSAT-EA

06/2021

JUNE

contacto@amsat-ea.org

eb1ao@amsat-ea.org

Translation by Fernando EC1AME



MIR-SAT1 - First Cubesat of Mauritius

The MIR-SAT1 was successfully integrated into the JSSOD (JEM Small Satellite Orbital Deployer) at the JAXA Tsukuba Space Center. After insert it into the spreader and pack it, the satellite was sent to NASA and is now waiting for its release. The MIR-SAT1, as part of the Cargo Dragon payload, was scheduled to be launched by the mission SpaceX CRS-22 at 9:29 PM (MUT) on June 3 2021. A new attempt is planned to satellite deployment at the end of June.



MIR-SAT1 is a 1U CubeSat mission with the following objectives:

1. Verify the performance of the subsystems on board receiving satellite telemetry and establish communication to and from the satellite (command and control).
2. Collect images of Mauritius and the Mauritius ZEE for the purposes of capacity building, experimentation and research.
3. Experimental communication with other islands via satellite (with scientific and / or emergency purposes), through a payload of ham radio digipeater.
4. The digipeater V / U 9600bps GMSK can be open for hamradio comms around the world when the satellite is not used for all of the above.

A downlink has been coordinated on 436.925 MHz.

Decoders for the ham radio community and schools have been developed by Chris AC2CZ and Daniel EA4GPZ and will be available on their WEB / Github sites. Links will be provided before of the launch on Tweeter, AMSAT-BB and Space Mauritius, see:

<https://spacemauritius.com/#telemetry>

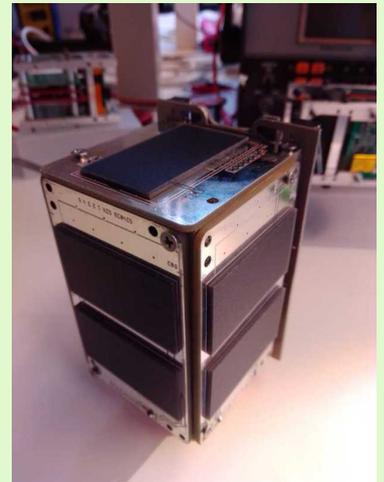
Next SSTV ISS Event

ARISS informs that there will be a new SSTV event of "Amateur Radio in Shuttle, Mir and ISS" from June 21 to 26. Transmissions from the Station International Space will be on 145.800 MHz FM using Pd120.

EASAT-2 and Hades launch delayed again

EA4GQS - Felix, President Amsat-EA

EASAT-2 and Hades, the sats built by AMSAT-EA will not be released in June with SpaceX as planned, as the FAA (the American Aviation Administration), rejected the license to the integrator Momentus Space, on whose Vigoride orbital transfer vehicle was supposed to go mounted the AlbaPOD ejector from Alba Orbital, inside of which are the AMSAT EA satellites, as well as others from organizations and universities.



The reasons for the FAA's rejection are on the capital structure of the company, which, according to the American agency, could endanger the United States national security. The next launch opportunity could be in December.

EASAT-2 and Hades were to have been launched in January this year on board of a SpaceX Falcon-9 rocket, but the Momentus license was rejected also by the FAA at that time.

Both satellites are FM and FSK voice repeaters, also having digitized voice recordings. Hades also incorporates an SSTV camera developed by the University of Brno in the Czech Republic and EASAT-2 incorporates as an experimental load a basaltic material from Lanzarote, similar to lunar basalts, provided by the research group on meteorites and planetary geosciences of the CSIC in the Institute of Geosciences, IGEO (CSIC-UCM) and that could be used as a construction material in the Moon. This project was promoted and has the collaboration of the ETSICCP (UPM).

The frequencies coordinated with the IARU for both satellites are:

EASAT-2

- 145.875 MHz uplink, Modes: FM voice (no sub tone) and FSK 50 bps
- 436.666 MHz downlink, Modes: voice FM, CW, FSK 50 bps, beacon FM voice with callsign AM5SAT

HADES

- 145.925 MHz uplink, Modes: FM voice (without sub-tone) and FSK 50 bps
- 436.888 MHz downlink, Modes: FM voice, CW FSK 50 bps, SSTV Robot 36, FM voice beacon with callsign AM6SAT.



AMSAT-EA will be in the air on all available satellites with the callsign AM1SAT from September 13 to 19, 2021 to celebrate the third edition of the AM1SAT trophy-contest. AMSAT EA operators will activate the callsign AM1SAT from a minimum of 14 different locations during that period of time, in order to facilitate the maximum number of EA grids via satellite.

As part of this activity and to encourage participation, will have the SILVER and GOLD classifications, as well as a trophy for those that get the largest number of grids and different satellites worked.

RULES TO GET THE CERTIFICATE

1. The diplomas may be requested by any worldwide radio amateur with a valid license.
2. Contacts with AM1SAT are valid if made through any amateur radio satellite, between September 13 at 0h UTC and 19 September 23:59 UTC, in the indicated modes .
3. The locators exchanged will be 4 digits, for example, IN71, IM68, Im77.
4. Diplomas are distinguished for contacts made in LEO satellites and others apart for contacts in GEO
5. Two groups of requirements are defined according to the location of the applicant to obtain LEO diplomas: within Europe (plus EA8 zones and EA9) and the rest of the world.
6. FM and CW / SSB / Digital categories are distinguished for diplomas LEO, there is only one category in GEO.
7. Diplomas will be awarded in silver (easier) and gold (more difficult).
8. A physical trophy sent free of charge will be awarded to the greatest hunter of grids and the biggest satellite hunter.

LEO DIPLOMAS

Participant in EUROPEAN territory plus EA8 and Ea9:

- LEO EUROPA FM SILVER Diploma: To obtain this diploma the Applicant should contact AM1SAT station on FM receiving 5 different locators, being understood by locator, the one composed of 4 digits, for example, IN71, IM68, IM77, etc.
- LEO EUROPA FM GOLD Diploma: To obtain this diploma the Applicant should contact AM1SAT station on FM receiving 10 different locators.
- LEO EUROPE CW / SSB / Digital SILVER Diploma: To obtain This diploma the applicant must contact the AM1SAT station in CW / SSB or digital modes, receiving 3 different locators.

- **LEO EUROPE CW / SSB / Digital GOLD Diploma:** To obtain this diploma, the applicant should contact the AM1SAT station on CW / SSB or digital modes receiving 7 different locators.

Participants out of europe:

- **LEO NO EUROPA FM SILVER Diploma:** To obtain this diploma, the requesting station outside Europe should contact the station AM1SAT on FM receiving 2 different locators.
- **LEO NO EUROPA FM GOLD Diploma:** To obtain this diploma, the station outside of Europe should contact station AM1SAT on FM receiving 4 different locators.
- **LEO NO EUROPE CW / SSB / Digital SILVER Diploma:** To obtain this diploma, the applicant station outside Europe must contact the AM1SAT station in CW / SSB or digital modes, receiving 2 different locators.
- **LEO NO EUROPE CW / SSB / Digital GOLD Diploma:** To obtain this diploma, the requesting station outside Europe should contact AM1SAT station in CW / SSB or digital modes, receiving 4 locators different.

DIPLOMAS GEO (Global)

- **SILVER GEO Diploma:** To obtain the GEO diploma in category SILVER, the applicant must contact the AM1SAT station receiving 5 locators in CW / SSB or any valid digital mode on the QO-100 satellite.
- **GEO GOLD Diploma:** To obtain the GEO diploma in category GOLD, the applicant must contact the AM1SAT station receiving 10 locators in CW / SSB or any valid digital mode on the QO-100 satellite.

Diploma	Plata	Oro
LEO Europa FM	5 locators	10 locators
LEO Europa CW/SSB/Digitales	3 locators	7 locators
LEO No Europa FM	2 locators	4 locators
LEO No Europa CW/SSB/Digitales	2 locators	4 locators

Diploma	Plata	Oro
GEO Global	5	10

GRID HUNTER TROPHY

The trophy will be awarded to the Grid Hunter, to the participant who receive a greater number of AM1SAT squares during the event. In case of tie, it will be awarded to the participant who has needed less time to contact them.

SATELLITE HUNTER TROPHY

The trophy will be awarded to the Satellite Hunter who has contacted AM1SAT through a greater number of different satellites during the event. In case of satellites with more than one mode or band (For example, AO-7, AO-92 or QO-100), it will only be counted as a single satellite regardless of whether both modes or bands have been worked on. In case tie, it will be awarded to the station that has needed the least time in get the claimed figure.

In case the same station is worthy Of the two trophies, the Satellite Hunter Trophy will go to the second classified.

Sending of logs and receipt of diplomas and trophies

- No physical or electronic QSLs are required. When the Requirements are done, the applicant must send a list with the QSOs in ADIF form, including his callsign, name and the data of the different QSOs (Date, time UTC, frequencies, mode, locator received and satellite used for contact), and the email in which you want to receive the diploma. The diplomas will be sent within a maximum period of 2 months and only in PDF format, free of charge. The trophies will be sent without any cost to the winner to the address indicated.
- The log and any question regarding the rules must be sent to eb1ao@amsat-ea.org
- The deadline for receiving logs is October 1, 2021 at 23:59 UTC. The logs of the AM1SAT operators will be considered valid when checking the QSOs . In case of discrepancy or incidence, this will be solved by AMSAT-EA.

PORTABLE STATION OF THE MONTH - (WL7T- TYLER)



HOMEMADE LI-ION BATTERY FOR YAESU FT-817

EA1PA - SALVA

Every ham op. recognizes this little multiband all mode rig as an example of portability due to its small size and reduced weight; we talk about the superb Yaesu FT-817. It is also widely used in the "satellite" community since setting up a pair of these allows working full duplex linear transponders in portable operations, it is the most common setup among expeditionaries.

In my case, not long ago I acquired a 817, a small "great toy" to enjoy outdoors, and almost immediately I decided to improve the autonomy that its internal Ni-MH battery offers. Initially I prepared an external Li-ion battery built from recycled 18650 cells . It was to be attached to the body of the equipment using velcro, it worked very good but it meant a "bulge" to add and extra weight. Then I thought about replacing the internal battery with another one with higher performance coupling it to the available gap.

As usual for me, the challenge was to take advantage of and reuse the material that had available at home, but unfortunately three 18650 lithium cells did not fit into the available space. What a disappointment ... I had to think of something flatter and lower in height for the original lid to close. Finally, the solution is based on combining three identical mobile phone batteries. Although they are used they allow me to reach 12V, in addition to charging them when the equipment is connected directly to a 13.8V source. The installed board is in charge of the balanced loading and controlled unloading from the same connector.

Samsung battery specifications:

- Capacity: 2600mAh
- Composition: Lithium Ion
- Nominal voltage: 3.8V
- Charging voltage: 4.35V
- Dimensions: 63 x 57 x 5.5 mm



Steps for building the homemade battery:

1. Collection of material: 3 batteries + connector + charging and protection plate



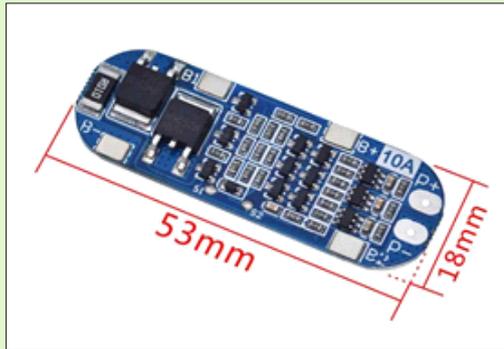
2. Bundle the three batteries with electrical tape.



3. Connect the batteries in series, positive with negative, to increase the voltage in terminals.



4. The next step is to solder the protection and charging plate.

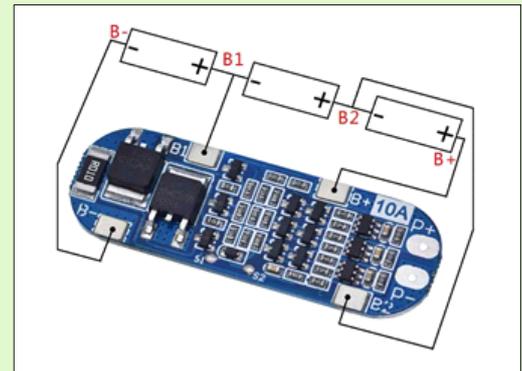


3S 10A Lithium battery board specs:

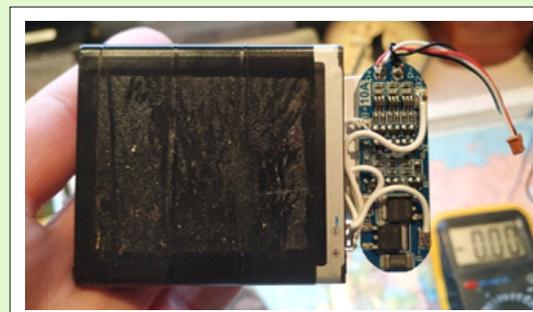
- Model: HX-3S-FL10-A
- Input voltage: 12.6-13V
- Max. instantaneous current: 9-10A
- Working current: 0-8A
- Overcharge voltage: 4.25-4.35V
- Overdischarge voltage: 2.3-3.0V
- Operating Temperature: -40 to 50°C
- Dimensions: 53 x 18 x 4mm
- Short circuit protection (self-recovery)

I bought the board on ebay though I had to wait a lot time to get it.,

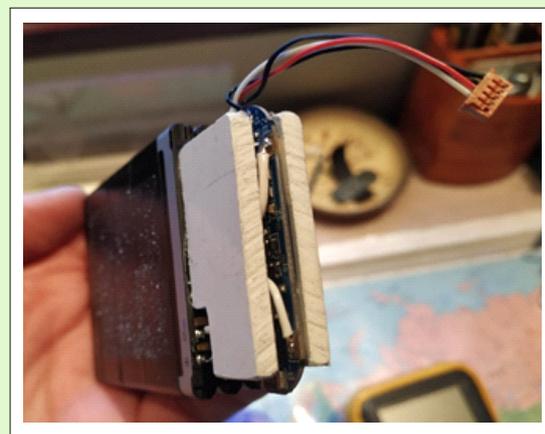
The connection scheme is shown in the attached figure.



5. Attach the charging plate to the batteries. Solder cable with connector for the rig.



6. Protection of the charging / protection plate to integrate it into the package.



7. Cover the entire assembly with insulating tape. Leave outlet for cables from connector.



8. Battery connection and installation in the equipment. Put the lid on.



9. Power-up test.



The resulting battery specifications would be as follows:

- Capacity: 2600mAh / 29.64Wh
- Composition: Lithium Ion
- Nominal voltage: $3 \times 3.8V = 11.4V$
- Max. voltage: $3 \times 4.2V = 12.6V$
- Charge voltage: $3 \times 4.35V = 13.05V$
- Dimensions: 85 x 57 x 16,5 mm

Final thoughts:

- Autonomy has been significantly increased with respect to the original battery despite being using used mobile phone batteries.
- Convenient battery charging by connecting the equipment to an external source with 13.8V following the standard procedure mentioned in the manual:

1. Turn the **FT-817ND** off (see page 18), then connect the supplied battery charger DC connector to the **INPUT: 13.8V** jack on the rear panel of the **FT-817ND**.
2. Plug the battery charger into the nearest AC wall outlet.
3. Press the **FT-817ND**'s **PWR** switch for one second to turn the transceiver on.
4. Press the **F** key momentarily.
5. Rotate the **SEL** knob so that the function row containing "[CHG, VLT, DSP]" appears on the display.
6. Press the **A** key to select the [CHG] option (the display will immediately revert to the regular frequency display).
7. Turn the **FT-817ND** off. The display will indicate "CHG TIME RMN" and remaining time to indicate the time remaining before a full charge is achieved on the **FNB-85**.

CHG TIME RMN
7:59

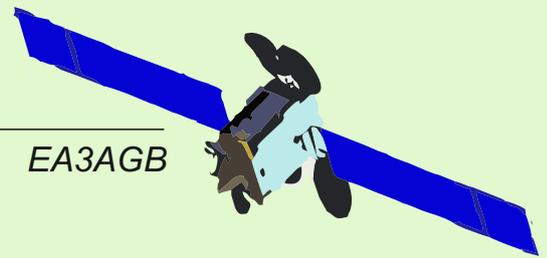
- The full charge time is quite long due to the intensity provided by the rig which is limited and quite low. According to that I have read in some forum about 180mA, although there is a "Mod" to duplicate it.
- I do not recommend buying new mobile phone batteries for this project since they are not very cheap. It's only worth it if you already have them, even, they are used. The connector I have used is also repurposed and comes from an old laptop. You can get Li-Ion batteries designed specifically for the FT-817 and are no toverpriced in the Chinese market.



- Project compatible with the FT-817, FT-817nd and FT-818 models.

Greetings . Stay safe and good radio.

Salva
EA1PA
salvaggff@yahoo.es



CALLSIGN	LOCATOR	MODE	QSL VIA
4X0GDL	KM70	SSB	4Z1KD
5V7MI	JJ60	SSB	SP3PMM
AP2AM	MM63	SSB	LOTW/EQSL
AP2RA	MM50	SSB	QRZ.COM
BG0ARE	NN43	CW	BURO/DIRE
C5C1AR	IM50	SSB	QRZ.COM
D4VHF	HK76	SSB	D4C
DP0POL/MM	IM49	SSB	QRZ.COM
DP0POL/MM	IO90	SSB	QRZ.COM
EA6Y	JM19	CW	QRZ.COM
7Z1SJ	LL25	SSB	LOTW
LA9XGA/P	JP39	SSB	LOTW
LA9XGA/P	JP40	SSB	LOTW
LA9XGA/P	JO48	SSB	LOTW
LA9XGA/P	JO49	SSB	LOTW
LA9XGA/P	JP20	SSB	LOTW
S0S	IL36	SSB	QRZ.COM
S0S	IL56	SSB	QRZ.COM
TK5JJ	JN42	SSB	QRZ.COM
RU4HU/P	LO54	SSB	QRZ.COM
UA9WE	LO74	SSB	EQSL
VU2OLU	MK80	SSB	QRZ.COM
VU2OJ	ML60	SSB	QRZ.COM
ZS1SHC	JF95	SSB	QRZ.COM
ZS5Y	Kf59	SSB	QRZ.COM



PA5X, as 5T5PA



CT7AOV / OM1AOV

C5 GAMBIA, Between October and November, F5RAV, F5NVF and M0NPT, expect to be active from C5, depending on Covid 19 restrictions.



Ondra OK1CDJ/OL0M from Jn47, Salzburgo

AMSAT-EA products in the URE store

For several weeks you have at your disposal several products of AMSAT-EA personalized with your callsign on the URE website.



*Don't hesitate
Support AMSAT-EA*