BEFORE YOU LEAVE HOME

- ☐ Charge the **Moon Ship** over USB-C with its switch **ON** (it only charges when on).
- ☐ Charge the **Moon Base** 2S LiPo on a balance charger (full 8.4 V), or pack a USB-C power bank.
- ☐ microSD card pushed fully into the Moon Base (FAT32, 32 GB or smaller).
- ☐ In StarLog: download last time's flights, update firmware if offered, erase the devices if they're full. Unsure of a device? **Check device…**
- ☐ Bench test: switch both on. Expect **3 chirps** from the Moon Ship and a blinking **PAD** light.
- ☐ Pack: laptop with StarLog, USB-C **data** cable, power bank, foam, tape.

AT THE PAD

1. **Moon Base on first,** with a clear view of the pad, raised off the ground. Lights run once, then **1 chirp = ready**.
2. **Rocket on the rail.** Vent holes clear, Moon Ship held firmly in the bay.
3. **Moon Ship switch ON** (toward the buzzer holes). Keep the rocket still for about 3 s.
4. **3 short chirps** = armed. Long repeating beeps = fault: don't fly.
5. **PAD blinks green** = link good. **ERROR solid red** = Moon Ship battery low: don't fly.
6. **Clear the pad and launch.**

Altitude zero is set when the Moon Ship is switched on. Always switch it on at the pad, on the rail, never at the prep table.

DURING THE FLIGHT

Moment	What you'll see and hear
Lift-off, past 33 ft (10 m)	● **FLY** on; a beep every second
Apogee	Long tone, 2 s
Under the chute	● **FLY** stays on; double beep every second
Touchdown	Moon Ship steady for 5 s, then sends its landed message
Landed	● **RECOVER** blinks; 3 beeps, pause, repeat for about a minute

Signal lost? ● **ERROR** blinks slowly; 4 beeps, pause, repeat for about a minute. After a while, ● **RECOVER** and ERROR blink together once the rocket should be down: **probably landed**. The Moon Ship keeps its own complete log.

RECOVERY

1. **Carry the Moon Base toward the rocket.** The green ● **PAD** light pulses faster as you get closer. Walk, pause, turn slowly.
2. Close in, **listen for the Moon Ship's chirp every 5 seconds**. Leave it on until it's found.
3. **Switch both devices off and on before the next flight.**

MOON BASE BUZZER

Sound	Meaning
● after the lights run	Ready
● every second	Climbing
▬ long tone	Apogee
●● ●● every second	Under the chute
●●● pause, repeat	Landed (1 min)
●●●● pause, repeat	Signal lost, any time (1 min)

MOON BASE LIGHTS

Light	Pattern	Meaning
● **PAD**	Slow blink	Link good, rocket on the pad
● **FLY**	Solid	In flight
● **RECOVER**	Slow blink	Landed, flight saved
● **RECOVER** + ERROR	Both blink	Probably landed, not confirmed
● **PAD**	Pulses after landing	Rocket finder: faster = closer
● **ERROR**	Fast blink	microSD card or radio didn't start
● **ERROR**	Slow blink	Signal lost
● **ERROR**	Solid	Moon Ship battery low (3.40 V or less)

Lights, top to bottom: ERROR, PAD, FLY, RECOVER. ERROR shows the most serious problem first.

MOON SHIP BEEP CODES

Sound	Meaning
● ● ● 3 short chirps	Calibrated and armed, ready to fly
▬ 1 long, repeating	Altitude sensor fault
▬ ▬ 2 long, repeating	Radio fault
▬ ▬ ▬ 3 long, repeating	Memory fault
● 1 chirp every 5 s	Landed: recovery beacon and finder call
● 1 chirp when StarLog connects	StarLog is talking to it
Silence at switch-on	Switched off or battery flat

The same codes are printed on the underside of the Moon Ship. Any fault code: don't fly. Plug it into StarLog for an explanation.

DOWNLOAD WITH STARLOG

1. Open StarLog. Plug the Moon Ship or Moon Base in with a USB-C **data** cable (charge-only cables won't work).
2. Within a few seconds it chirps once and the panel shows **Connected to Moon Ship** or **Connected to Moon Base**. Nothing? Click **Reconnect**.
3. **Download latest flight**, or **Download all** for everything not yet saved.
4. Plug in both at once and use the **Moon Ship / Moon Base** switch. StarLog pairs the two logs of each flight.

> Flights already on your computer show **Saved as Flight N** and are never downloaded twice or overwritten.

NO LAPTOP AT THE FIELD?

Nothing is lost. The Moon Ship holds up to 99 flights and the Moon Base keeps each one on its microSD card. Download them at home. Or take the card out (Moon Base off) and use **Import file…** in StarLog.

UPLOAD TO STARLOG FLIGHTS

1. Sign in at **flights.moonbeamcomms.com** and click **Upload flight**.
2. Choose the flight file StarLog saved (Documents › StarLog › StarLog Flights).
3. Flights signed by a registered Moon Ship or Moon Base show ✓ **Verified**.

WHERE THE DATA LIVES

	Moon Ship	Moon Base
Rate	20 per second	10 per second (radio)
New file	Each launch	Each power-up
Signal loss	Not affected	Gap, marked in StarLog
Holds	Up to 99 flights	microSD card, up to 99
Get it	USB-C to StarLog	USB-C or card reader

The two devices number their files separately. StarLog matches them by their contents.

KEY NUMBERS

Launch detected	Above 33 ft (10 m), climbing over 50 ft/s (15 m/s)
Apogee detected	6.6 ft (2 m) below the highest point
Landing detected	Steady within 5 ft (1.5 m) for 5 s
Signal-loss alarm	No data for 3 s
Moon Ship battery	1S LiPo 150 mAh; low at 3.40 V
Moon Base battery	2S LiPo; full 8.4 V; or USB-C
Pad pre-roll	2 s before lift-off is kept
Unit conversion	feet = meters × 3.28084

DEVICE ID

Each device has an ID (MS-… or MB-…) on StarLog's **Firmware** line, with a **copy** link. Email it to support@moonbeamcomms.com if your flights show **Not verified**.

TROUBLESHOOTING

Problem	Try this
Moon Ship silent at switch-on	Switch toward the buzzer holes, then charge it.
Long beeps repeating	Fault: don't fly. Switch off and on; if it continues, plug into StarLog.
ERROR fast blink	microSD card missing, loose, over 32 GB or not FAT32. Re-seat it and switch off and on.
PAD never blinks	Moon Ship on and chirped? Clear line of sight? A replacement device may need pairing.
ERROR solid at the pad	Moon Ship battery low. Charge before flying.
Reads a few feet at rest	Moon Ship was switched on elsewhere. Switch it off and on at the pad.
Frequent signal loss	Raise the Moon Base, move closer. Carbon fiber, metal and foil block the radio.
RECOVER and ERROR both blink	Probably landed. Walk toward the rocket with the Moon Base until the green light pulses.
Next flight not recorded	A device was left on after landing. Switch both off and on before each flight.
StarLog can't find a device	Use a data cable, switch the device on, click **Reconnect**.

> **Safety:** follow your club's range safety rules and the NAR or Tripoli safety code. Moon Ship and Moon Base never control ignition or recovery deployment.

Help: **support@moonbeamcomms.com**. Send your device ID (MS-… or MB-…) and what happened.

Full manuals: **moonbeamcomms.com/docs**