

HARVEV MINI MANUAL UNITS

The Teacher's Toolkit

Everything you need to read your unit, by hand, with pupils.

Your HarvEv Mini Manual Unit is a compact 8-pod hydroponic garden — a self-contained, mains-powered countertop system that grows lettuce, herbs, and salads without soil, year-round. It sits on a desk, a windowsill, or a quiet corner of your classroom.

Once a week, you and your pupils take a small set of measurements from the unit and submit them through the Trust dashboard. This guide tells you exactly what equipment you need, how to take a reading, and where your school's journey can lead next.

Where your school sits in the bigger picture

The Trust's sustainability programme has a three-tier roadmap. Every school starts at Tier 1 — that's where you are now. Tier 2 is piloting at Elmhurst. Tier 3 is in design.

Tier	What it is	Where it sits	Status
1	Mini Manual Unit — 8-pod countertop hydroponic system	Indoor classroom, mains-powered, manual readings	<i>Where you are now</i>
2	HarvEv-02 / Mobile Unit — 30-pod vertical tower with full-spectrum lights and automated sensors	Indoor or outdoor, RecyclaCell solar + Prius battery powered	<i>Live at Elmhurst (lead pilot)</i>
3	Grid to Grow Hut — scaffold-built, all-weather growing environment with multiple systems	Outdoor estate, full canopy, year-round operation	<i>In design — funding-dependent</i>

What this means for you: building a strong Tier 1 rhythm — regular readings, engaged pupils, the dashboard woven into lessons — is the foundation. The success of Phase 1 is what makes the case to funders for what comes next, both for your school and across the Trust.

What you'll be measuring

Four numbers and one observation, taken from the water reservoir of your unit.

Reading	Why it matters	Healthy range	Tool
pH	How acidic the water is. Too acidic or alkaline	5.8 – 6.8	Digital pH pen

Reading	Why it matters	Healthy range	Tool
	and plants can't absorb nutrients.		
EC / TDS	How much fertiliser is dissolved in the water. The plants' lunch.	1.0 – 1.8 mS/cm	Digital EC/TDS pen
Water temperature	Roots need oxygen — warmer water holds less of it.	17 – 22 °C	Digital thermometer
Reservoir level	Tells you when to top up. Plants drink more on hot days.	Above 40 %	Eye — use the unit's window
Plant status	Your eyes are still the best sensor. How do they look?	Thriving → healthy → stressed → wilting	Observation

Recommended kit — the essentials

Buy these and you're ready. Approximate starter cost: from £200 per school. All items available on Amazon UK.

ITEM 1 – 4-IN-1 COMBINED METER (PREFERRED)

Yinmik 4-in-1 pH / EC / TDS / Temperature Meter

Approx £30–£35 · Search: "Yinmik 4 in 1 pH EC TDS hydroponics" on Amazon UK

Why this one: a single waterproof pen handles three of your four numerical readings. Pupils dip it briefly into the unit's reservoir, wait a few seconds, read the screen. Pre-calibrated out of the box and accurate to ± 0.05 pH — plenty for educational use. Includes calibration sachets to refresh accuracy every few weeks.

Note on small reservoirs: your Mini Manual Unit holds about 4 litres, so don't plunge the probe deep — just dip the tip below the waterline, away from the pump intake.

ITEM 2 – IF YOU PREFER TWO SIMPLE PENS INSTEAD

Vivosun pH Pen + Vivosun TDS/EC Pen — sold as a combo

Approx £25–£30 for both · Search: "Vivosun pH and TDS meter combo" on Amazon UK

Why two pens: simpler for younger pupils — each pen does one job. Excellent introduction to scientific instruments. The yellow Vivosun pH pen is a primary-school favourite for being durable and easy to read.

ITEM 3 – CALIBRATION SOLUTION

pH Calibration Powder Sachets (4.0, 6.86, 9.18 buffers)

Approx £5–£8 for a pack of 9 sachets · Search: "pH calibration powder sachets" on Amazon UK

Why you need it: digital pH pens drift slightly over time. Once a month, dissolve one sachet in distilled water and dip the pen in to recalibrate. A 30-second job. Great Year 6 science lesson on instrument calibration.

ITEM 4 – DISTILLED WATER**Distilled or de-ionised water (5 L)**

Approx £6–£8 · Search: “distilled water 5L” on Amazon UK or any car parts shop

Why you need it: rinse the pen probe between dips, and use it to dissolve calibration powders. One 5L bottle lasts most schools a full term.

ITEM 5 – OPTIONAL BUT USEFUL**Submersible aquarium thermometer with digital read-out**

Approx £6–£10 · Search: “digital aquarium thermometer” on Amazon UK

Why: if your 4-in-1 meter doesn't read temperature well in such a small reservoir, this little display sticks to the outside of the unit with the probe inside, giving pupils a glance-able temperature any time.

Total cost — your school's starting kit

Item	Approx cost	Lifetime
DRYADES 8-pod hydroponic kit (the unit itself)	£55	Years
Yinmik 4-in-1 pH / EC / TDS / Temp meter	£23	2–3 years
Hydroponic nutrient — Formulex 1 L	£11	School year
pH Up + pH Down kit (250 ml each)	£18	Multi-year
pH calibration powder sachets (pack of 6)	£7	1 year
Distilled water (5 L)	£5	1 term
Seeds (basil / lettuce / herbs)	£3	1 year
Total per school	from £200	

How to take a reading — the 5-minute routine

Once a week is plenty. Best done on the same day each week so pupils get used to the rhythm.

1. Wash hands.

Plants don't need our germs.

2. Open the lid or cover of the unit's reservoir.

Most countertop systems have a lid that lifts off. Be gentle — mind the pump and the wires.

3. Rinse the meter probe with distilled water.

A quick squirt is enough. Keeps the readings honest.

4. Dip the probe just below the waterline — don't plunge it.

The reservoir is small (about 4 litres). Stay near the surface, away from the pump intake.

5. Wait until the number stops moving — about 20 seconds.

Press “Hold” if your meter has it, then read the screen.

6. Switch mode and repeat for each reading.

A 4-in-1 pen has a button to cycle through pH → EC → TDS → Temp.

7. Check the reservoir level.

Most countertop units have a built-in water-level window. Estimate roughly what % is left.

8. Look at the plants. Choose: thriving / healthy / stressed / wilting.

Trust your eyes — pupils are surprisingly good at this.

9. Rinse the probe again, replace the cap, close the lid.

A clean probe lasts much longer.

10. Submit the readings online — or write them on the paper logbook for now.

See the printable Pupil Logbook for a paper version pupils can fill in.

Where to go online

Bookmark this one URL — everything else is one click away from here:

<https://hrm-globalsolutions.com/mini-units/>

From the home page you can reach:

- Submit this week's reading (teacher login)
- The Trust dashboard — see all five schools' latest readings
- About your unit — the three-tier journey explained
- The glossary — plain English for every term, for pupils and teachers
- Downloadable resources — this toolkit, the pupil logbook, editable versions
- Help & support — quick answers when you're stuck

Direct links — if you'd rather skip the home page:

Submit a reading:

<https://hrm-globalsolutions.com/mini-units/login.php>

View the dashboard:

<https://hrm-globalsolutions.com/mini-units/dashboard.php>

Open the glossary:

<https://hrm-globalsolutions.com/mini-units/glossary.php>

Download resources:

<https://hrm-globalsolutions.com/mini-units/about.php#resources-anchor>

Pupils and parents can use the home page and dashboard freely — they're public. Only the submission form requires the teacher login.

A few tips from the field

- Take readings at the same time each week if you can.

Morning is best — before the grow lights have warmed the water.

- Calibrate the pH meter once a month.

Drift is the silent enemy. A 60-second calibration keeps your data trustworthy.

- If a number looks wild, take it again before submitting.

Probes occasionally need a wiggle. A second reading usually settles it.

- Take a photo whenever you submit — even if just one a month.

Photos make the dashboard come alive. Your school's lettuce is more interesting than another row of numbers.

- Use the logbook tab for events (harvest, top-up, repair, class visit).

Numbers tell you what happened. Logbook entries tell you why.

Photos and pupil quotes make the story.

A regular reading rhythm and visible pupil involvement is what makes the project's case to its funders and partners. Photos and pupil quotes especially — they bring the dashboard to life and make the case for the programme to grow.

Questions, kit problems, or interesting findings? Contact the Trust via HRM Global Solutions · hrm-globalsolutions.com