



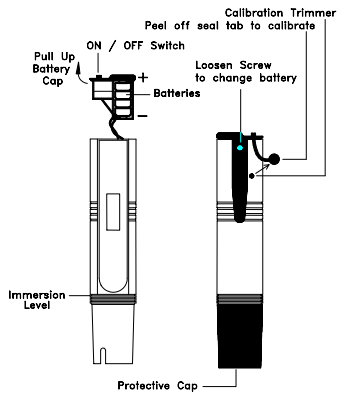
HIGH ACCURACY NUTRIENT TESTER

OPERATION MANUAL

SPECIFICATIONS

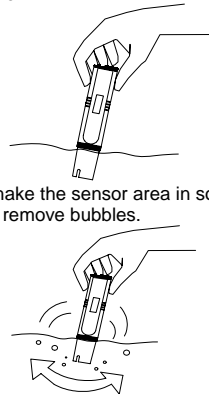
Model	Resolution	Range
EC Check	0.1 EC	0.1 to 10.0EC
CF Check	1 cF	0 to 100cF
TDS Check	100 ppm	100 to 19,900ppm
Accuracy	: ±2% full Scale	
Battery	: 4 x 1.5V button cell (Alkaline A76 or equivalent)	
Battery life	: Approx. 100 hours	
Auto Shut-off	: Approx. 15 minutes	
Operating temperature	: 0° to 50°C	
Temperature Compensation	: Automatic from 0° to 70°C	
Size (LxWxH)	: 170 x 32 x 15mm	
Weight	: Approx. 70 gm	

PRODUCT LAYOUT



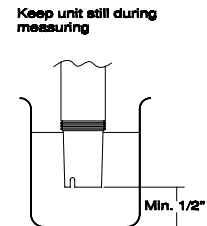
MAKING MEASUREMENT

1. Remove protective cap from bottom (See product layout).
2. To switch on the unit, depress the 'ON/OFF' switch located on top of the tester to 'ON'. If the unit was automatically shut off, depress twice to switch on.
3. Dip tester into sample solution up to the immersion level.



4. Shake the sensor area in solution to remove bubbles.

5. Keep still and maintain a distant from the base of solution as below. Wait for a stable reading before readout.



6. Always rinses the sensor area with water and blot it dry before and after each test.
7. Switch off the tester and replace protective cap before storing away.

NOTES ON MEASUREMENT
In the presence of certain radio transmitters, this product may produce erroneous readings. If this occurs then measurements should be repeated at another location.

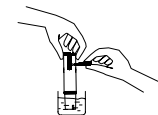
CALIBRATION

Your tester is factory calibrated. It is recommended to re-calibrate every six months to maintain the desired accuracy of the unit.

1. To calibrate, remove protective cap and rinse sensor area with distilled water.
2. Dip in standard solution.

Model	Order Code	Reading
EC check	2050	6.7
CF check	2050	67
TDS check	2050	4,700

3. Follow measuring procedure step 4 to 5 and wait for reading to stabilize.
4. Remove rubber seal tab (see layout).
5. With the use of a small screwdriver, locate the trimmer hole at the back of the tester and trim it to the reading.



6. Calibration is completed. Replace rubber seal tab and rinse sensor area thoroughly in distilled water before proceeding with any tests.

MAINTENANCE

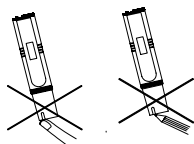
- It is a good practice to soak the sensor area in alcohol every six months for about five minutes. This will clean the sensor and maintain its accuracy.
- At any time if the readings are in doubt, perform a check by testing in the standard solution. If reading is out, re-calibrated unit according to calibration procedure.

LOW BATTERY ALERT
When the battery symbol appear on the display, this indicates a low battery and only 2 hours of continuous use remain. Though the unit may continue to function, the accuracy of the unit will be affected beyond the 2 hours.

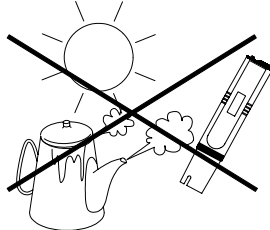
BATTERY CHANGE
To change battery, loosen screw from back of unit, then pull out the battery case from top of unit (see product layout) and replace all four batteries accordingly.

PRECAUTIONS IN HANDLING

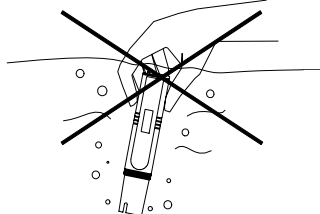
Do not touch, rub or scratch the sensor. It is very sensitive and might lose its accuracy.



Do not store unit under high temperature or direct sunlight.



Do not immerse the unit underwater. Though the unit is splash proof and water resistant, it cannot come under pressure and is beyond repair if water gets in unit. If accidentally drop in water, retrieve immediately and wipe dry the unit.



Do not clean unit with thinner or solvents. This will damage the unit. Use only a damp cloth to clean unit if needed.



NUTRIENT APPLICATION

The nutrient solution and its management are the cornerstone for success in hydroponics system. The function of a hydroponics nutrient solution is to supply the plants' roots with water, oxygen and essential mineral elements in soluble form. Measuring EC reading will facilitate the absorption process by the roots for plants.

In mixing nutrient, care must be taken to note nutrient supplier's recommendation on the EC or cF values. TDS values are converted at 1EC = 10cF = 700ppm. If supplier's factor is different, significant error may result. Below are just some references for some typical crops using commercial available premix chemicals or from inorganic fertiliser salts:

CROPS	pH	EC	cF	TDS
Asparagus	6.0 ~ 6.8	1.4 ~ 1.8	14 ~ 18	1000 ~ 1300
Broad bean	6.0 ~ 6.5	1.8 ~ 2.2	18 ~ 22	1300 ~ 1500
Broccoli	6.0 ~ 6.8	2.8 ~ 3.5	28 ~ 35	2000 ~ 2500
Cabbage	6.5 ~ 7.0	2.5 ~ 3.0	25 ~ 30	1800 ~ 2100
Capsicum	6.0 ~ 6.5	2.0 ~ 2.5	20 ~ 25	1400 ~ 1800
Carrots	6.5	1.5 ~ 2.0	15 ~ 20	1200 ~ 1400
Cauliflower	6.5 ~ 7.0	1.5 ~ 2.0	15 ~ 20	1200 ~ 1400
Celery	6.5	2.0 ~ 2.5	20 ~ 25	1400 ~ 1800
Cucumber	5.5	2.0 ~ 2.5	20 ~ 25	1400 ~ 1800
Eggplant	6.0	2.5 ~ 3.5	25 ~ 35	1800 ~ 2500
Lettuce	6.0 ~ 7.0	1.0 ~ 1.5	10 ~ 15	700 ~ 1100
Garlic	6.0	1.4 ~ 1.8	14 ~ 18	1000 ~ 1300
Onions	6.0 ~ 6.7	1.4 ~ 1.8	14 ~ 18	1000 ~ 1300
Potato	5.0 ~ 6.0	2.0 ~ 2.5	20 ~ 25	1400 ~ 1800

OTHER PRODUCTS

Order Code	Range
pH PAL	: 0.0 ~ 14.0 pH
ECO pH	: 0.0 ~ 14.0 pH
pH Pro	: 0.00 ~ 14.00
ECO REDOX +999mV	: -999 ~
TDS 1 (x10)	: 10 ~ 1,990ppm
TDS 2 (x100)	: 100 ~ 10,000ppm
TDS 3 (x10)	: 10 ~ 1,990µs
TDS 4 (x100)	: 100 ~ 19,900µs
WATER PAL	: 0 ~ 800ppm
WATER PRO	: 0 ~ 9990ppm
PureWaterPAL(ppm)	: 0.0 ~ 99.9ppm
PureWaterPAL (µS)	: 0.0 ~ 99.9µs
TDS Check	: 10 ~ 1990ppm (Direct display)
EC Check	: 0.0 ~ 10.0 EC
cF Check	: 0 ~ 100 cF