



Basic setup and power

To save battery power at every opportunity, take advantage of the **Memory** and that powering off loses nothing.

Purchased Maplin 11/07/2006
Serial: 090520199
Software build: 080703F01

Unit Info

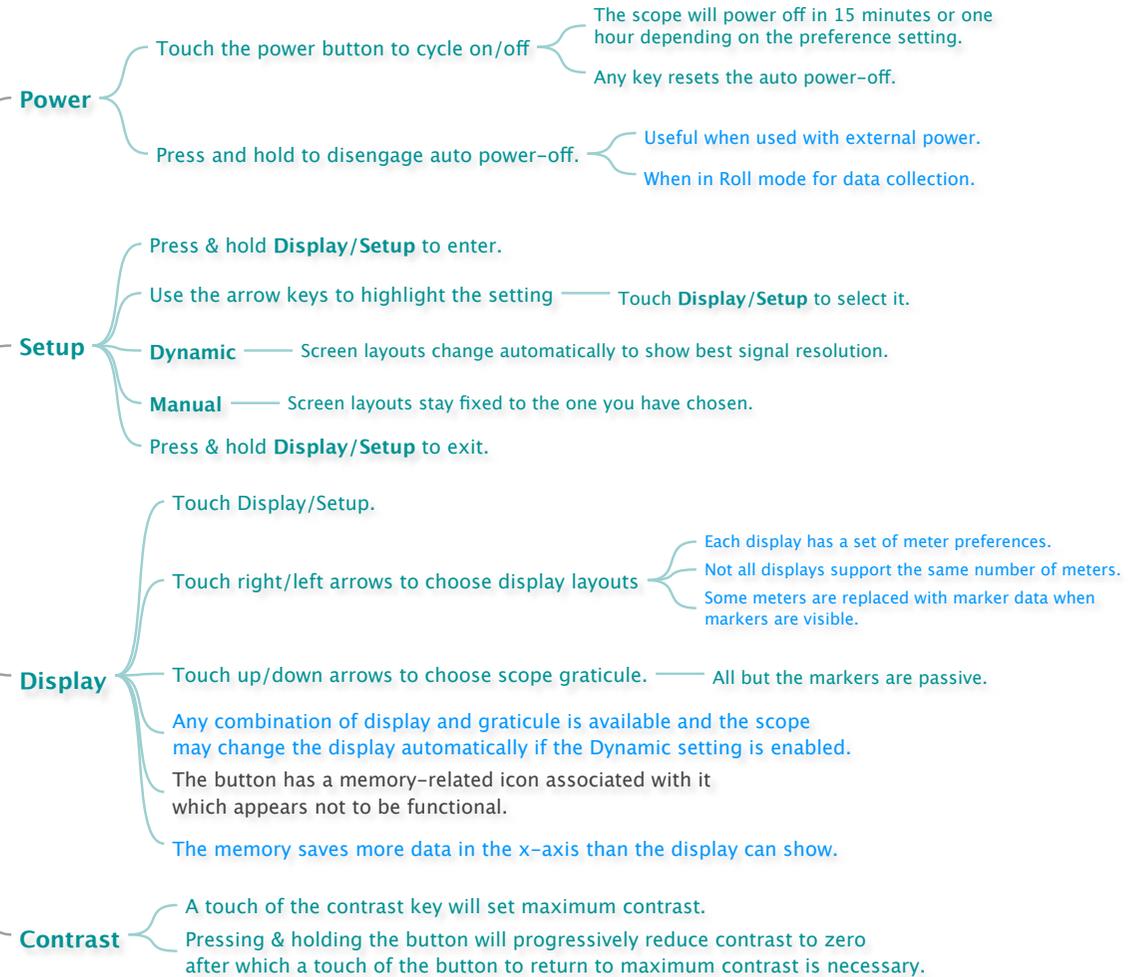
HPS10

The Manual

Unclear

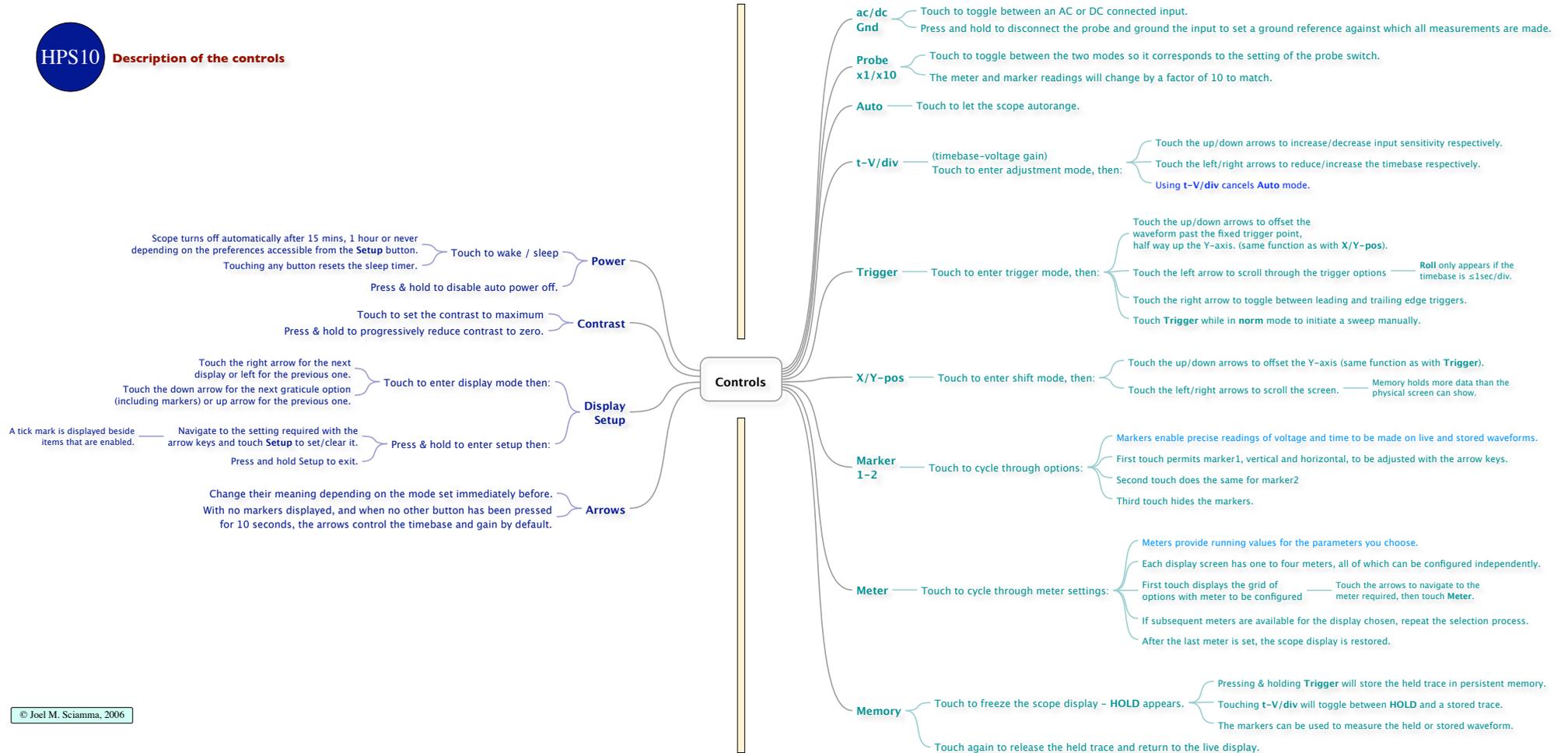
What is the memory icon above the Display button for?

2500mAH NiMH cells are a very good power source for the scope - charge externally with a good quality fast charger rather than internally for best cell life.





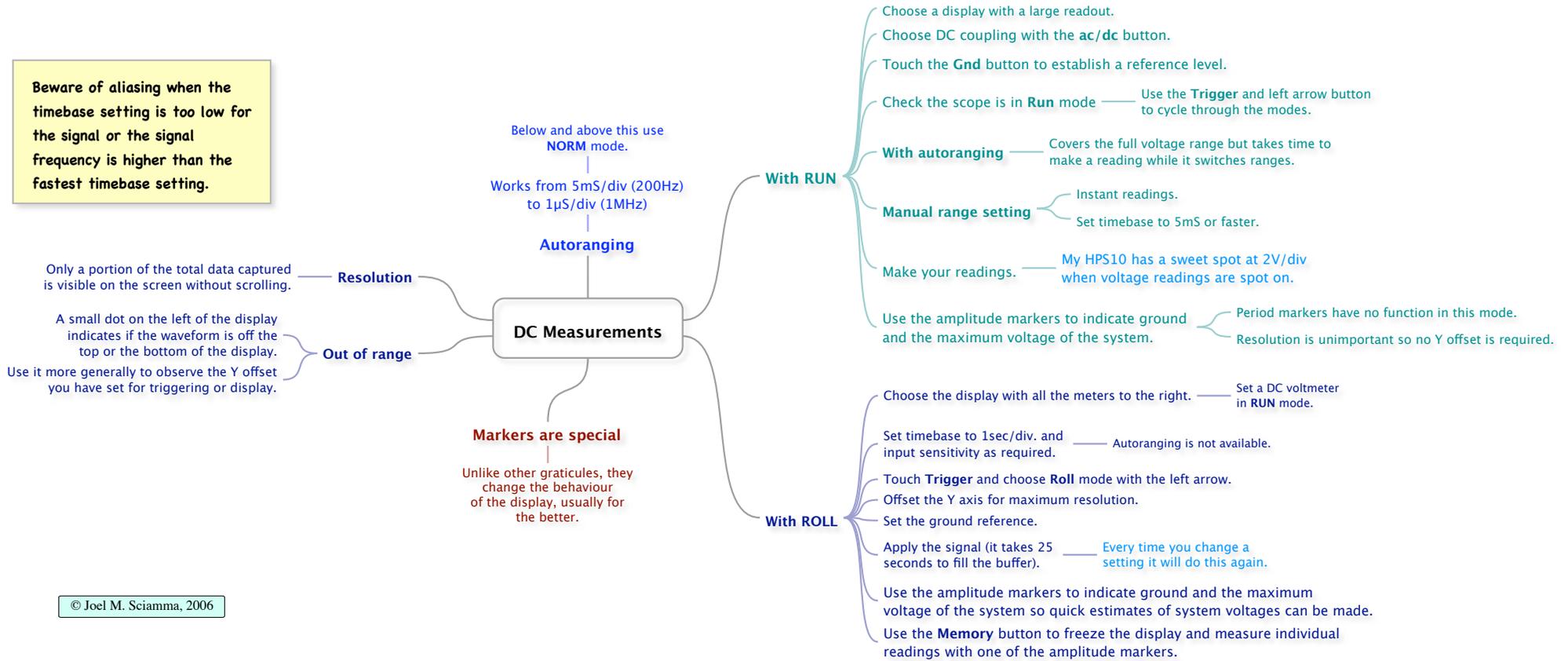
Description of the controls





Settings for measuring fixed or slowly changing voltages

Beware of aliasing when the timebase setting is too low for the signal or the signal frequency is higher than the fastest timebase setting.





Settings for measuring low frequency signals

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Notes

Autoranging does not apply <0.5mS/div, so set up the scope manually before applying the signal.

Works from 5mS/div (200Hz) to 1µS/div (1MHz). Below and above this use **NORM** mode.

Autoranging

The data is only fully visible in the wide screen displays — **Resolution**

A small dot on the left of the display indicates if the waveform is off the top or the bottom of the display. — **Out of range**

Low frequency Measurements

Markers are special

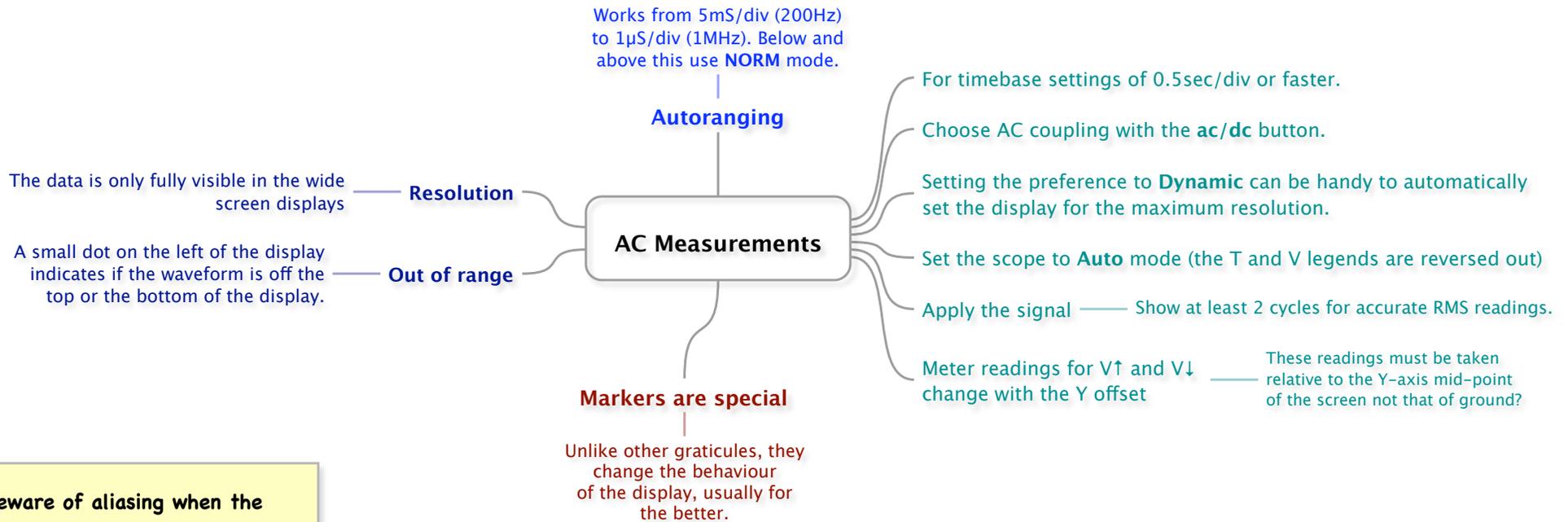
Unlike other graticules, they change the behaviour of the display, usually for the better.

- Change the pref to **Manual** instead of **Dynamic**. — Stops the display changing inappropriately.
- Choose the **Markers** graticule for best stability / no autoscrolling.
- Use the **NORM** trigger setting, — This might need some fiddling to get the trigger right for a stable display. **RUN** does not work well.
- Touch **Trigger** to get a sweep so you can:
- Offset the Y axis to make full use of the screen estate. — X/Y and Trigger with the up/down arrows seem to be equivalent.
- Apply the signal.
- In **ROLL** mode, set to **Manual** and use **X/Y** to scroll to the right of the display to see the signal happening.

Beware of aliasing when the timebase setting is too low for the signal or the signal frequency is higher than the fastest timebase setting.



Settings for measuring AC waveforms



Beware of aliasing when the timebase setting is too low for the signal or the signal frequency is higher than the fastest timebase setting.



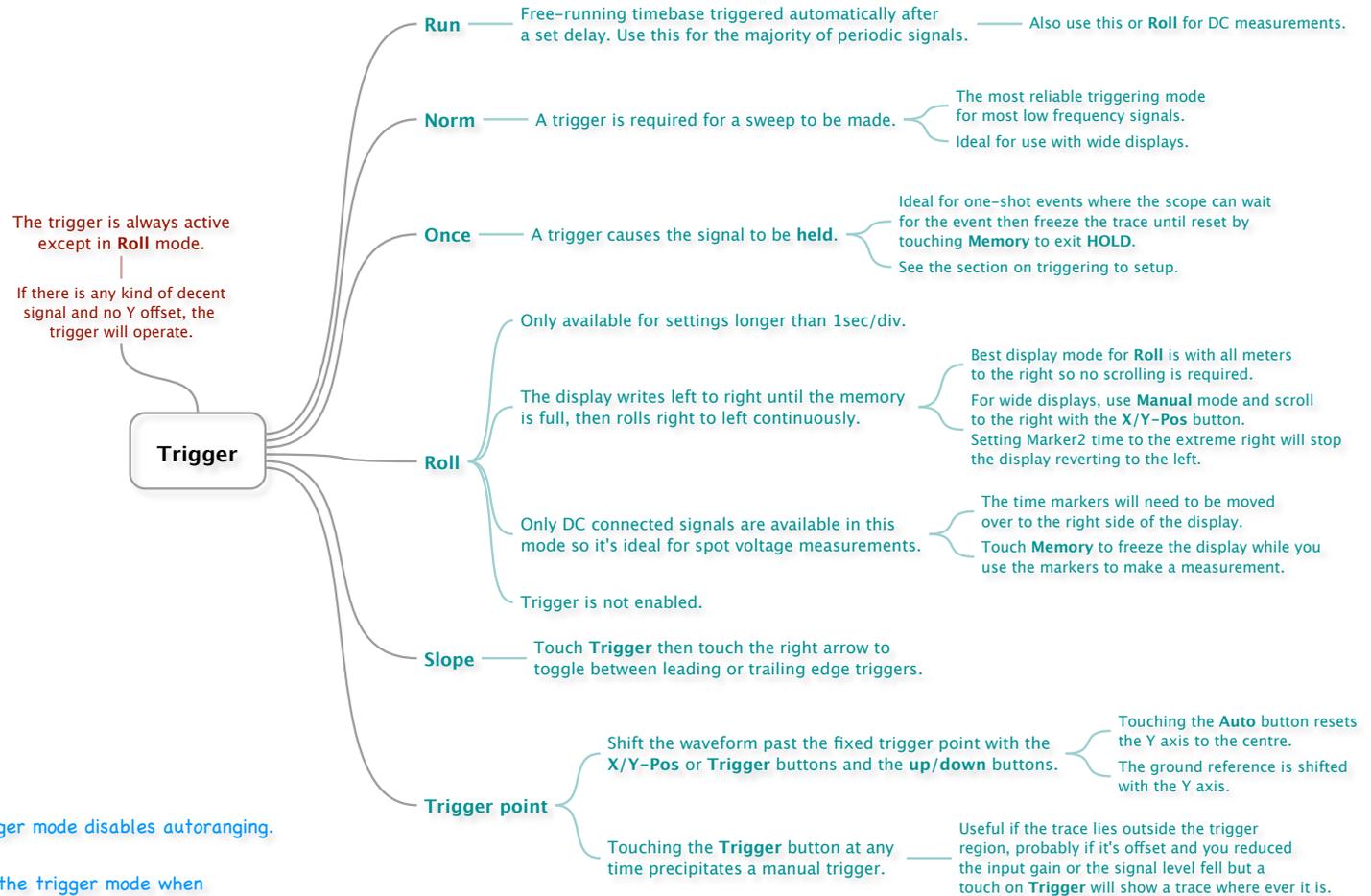
A voltage-controlled trigger that causes a sweep of the trace across the screen

On the HPS10, the trigger position is fixed at half the Y range and to alter the trigger point you offset the waveform relative to this point.

Because of this, it may be necessary to reduce the amplitude of the signal so it can be shifted near to one of the peaks without exceeding the screen limits. Effectively, to trigger near the peak of a waveform, you halve the vertical resolution. The HPS40 does it the right way by shifting the trigger point instead.

Pressing & holding the **Gnd** button establishes the ground reference at any Y offset you have set.

The waveform is then displayed relative to that reference, so if the trace goes negative with a DC input setting, that's what's really happening.



Notes

Changing the Trigger mode disables autoranging.
It's easier to set the trigger mode when there is no signal or a **HOLD** could be triggered immediately as you cycle past the **Once** mode.



A selection of digital readouts (meters) can be configured for each screen display

The screen height represents the dynamic range of the scope – if any part of the waveform lies outside, that part cannot be measured and ??? will appear in the meter.

When markers are displayed, some meters are overridden by their amplitude or period readings.

Choosing and using meters

Selecting meters

- Touch the meter button — The meter being chosen is displayed in it's normal position, with a reading.
- Use the arrow keys to choose a meter from the grid of options.
- Touch the meter button to move to the next meter until all have been set.
- Meters cannot be set if the timebase is $\leq 1\text{sec/div}$?

Without markers visible, only a portion of the beginning of memory is shown whereas when they are visible you see it all but need to scroll to see it. The display type is not a factor.

In Roll mode with markers off, the screen will start to scroll when the trace reaches the right hand screen edge but with markers on it goes a lot further and you have to scroll manually unless one of the markers is at that end already.

Markers

- Use the two horizontal markers to measure the height of the waveform between any two points so determining voltage.
- Use the two vertical markers to measure the time from one cycle to the next to get an accurate reading of frequency. Or any other time interval.
- Touching the **Marker** button permits changes to the 1st horizontal and vertical markers.
- Touching it again permits changes to the 2nd horizontal and vertical markers.
- A third touch hides the markers.

Notes

- Amplitude markers can be used and work accurately even when parts of the waveform are off the screen. Handy for making measurements from just a part of the waveform using higher sensitivity input settings.
- Markers give more consistently accurate readings than the meters.
- Time marker 1 determines where, along the X-axis, the display is positioned.
 - Move to the left for **Run, Norm, and Once**.
 - Move to the right for **Roll**.
 - If M1 is full left and M2 is full right, the **Marker** button becomes a quick way to view either end of the trace once memory is full.
- Because the display resolution is limited, try to make measurements on parts of the trace as far apart as possible. Adjust the gain and timebase to stretch the trace as far as you can before using the markers for really accurate measurements.