

DIFFERENTIAL AND OFFSET SCOPE

Some scopes are just differential, and some scopes are just offset.

An Offset (or single ended input) channel means that each channel relies on one earth connection. On the ATS500XM for example the BNC scope lead ports all have the outer part of the BNC connected of all channels and the signal generator.

On for example the ATS500XM, when two channels are used, one lead will have two measurement probes and one earth probe, so 3 leads altogether.

In almost all cases are measurements made from earth with an Offset scope.

A Differential channel means that the channel has its own 'earth' lead and its own 'measurement' lead. See each differential channel as a standalone (very fast recording) multimeter with a red lead and a black lead.

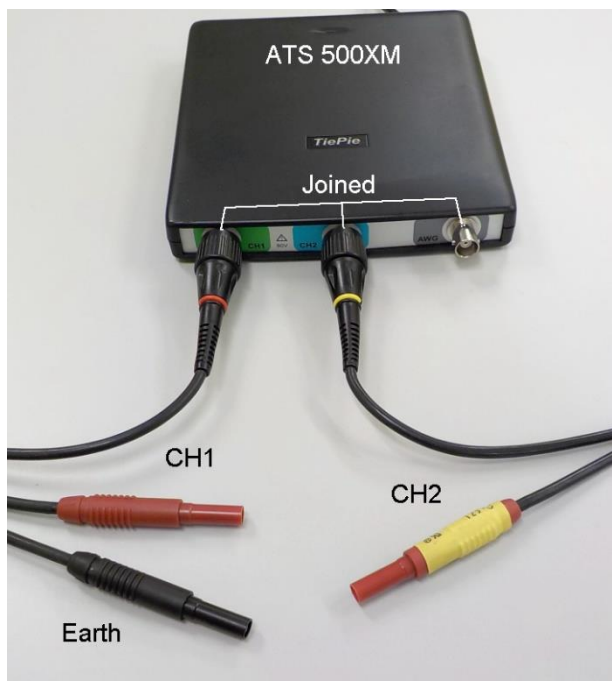
On for example a 4 channel Differential scope (ATS 6004XM) you will have 4 measurement probes and 4 (earth) probes, so eight leads altogether.

This allows you to measure for example across a common rail injector (with signals on both sides of the injector) while the other channels can be used to measure other signals unaffected.

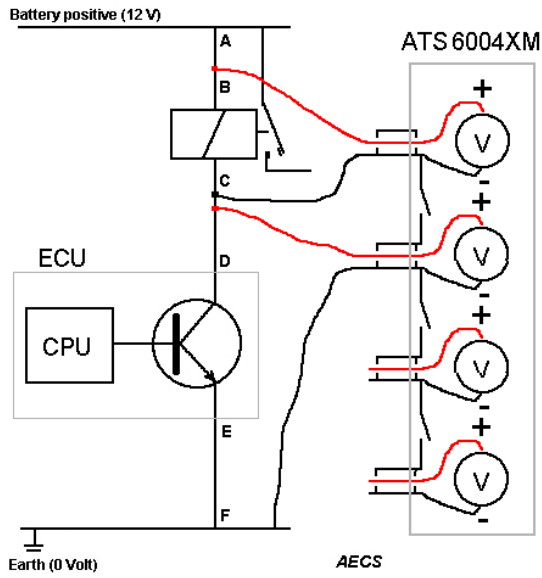
An Offset/differential scope (e.g. ATS6000 series scopes) can be switched (in the software) to be an Offset or a Differential scope, on each channel individually.

This gives you the advantages of both scopes, un affected differential measurements and low number of connections to make.

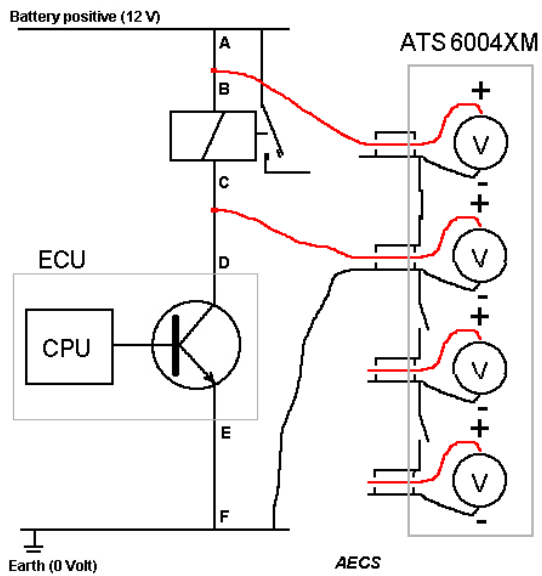
To prevent a short circuit through the earth leads when the scope has been inadvertently switched to Offset mode, an adjustable and resettable set of trip switches has been build in the offset/differential scope, called "Safe Ground".



ATS 500XM OFFSET scope. BNC connectors are joined.



*ATS 6004XM Offset/Differential scope in full Differential mode.
Please note the switches between the channels.*



ATS 6004XM Offset/Differential scope Partial in Differential mode (Ch3 and Ch4) and partial in offset mode (Ch1 and Ch2).