# *Console Programming Tips - Reference Groups* *by Rob Halliday*

Understanding what the Strand 300- and 500-series lighting consoles call 'reference groups', and which some other consoles call 'preset focuses' or 'palettes', is the key to dealing with moving lights on these consoles.

The concept of the reference group is to separate what you want a light to be doing - pointing to downstage-centre, being in colour red - from how the light actually achieves that effect - which might involve it having a pan and tilt value of 58/28 or a certain combination of cyan-magenta-yellow values. There are many advantages to working in this way. One of the most useful is when you have a light pointing to a particular place in many cues. Using a reference group means that if you ever need to re-focus the light to get it back to pointing there - perhaps because the rig has changed height, or you've moved to a different venue on a tour, you only have to update the one reference group for that position rather than lots of different cues. Each cue knows that the light is meant to be pointing to down-centre, but it is only when you actually run a cue that the console looks up the relevant reference group to see what the light needs to do to make it point to down-centre.

The other principal advantage is that the console's moving light channel display (which you see when you set the Smart Channel Display under the [SETUP] screen to TRACKER PRESET then switch back to [LIVE] and select a moving light) becomes more meaningful; if you've used reference groups you'll see that the light is set to 'down-centre' in 'red' in a 'dots' gobo rather than just a collection of meaningless numbers. This makes it easier to examine what your show is doing - and also easier for an operator to tell when there's a problem later in the life of the show. If the screen says the light should be red and it's actually green, there's probably a fault with the light!

Reference groups in the 300- and 500-series consoles (note that 400-series consoles, unless upgraded to use a Pentium processor, cannot use reference groups) are a variation on standard groups, traditionally used to provide easy selection of multiple channels. Traditional groups are recorded as they always have been - for example:
[1] [THRU] [10] [@] [5]
[GROUP][100][RECORD]      (assuming direct 1 digit channel control mode)
will store those channels at that level into group 100. You can then type

[GROUP][100][@][5]
to quickly set those channels to 25% - 50% of their recorded level.

Storing reference groups works slightly differently. Patch a moving light as channel 1, make sure Smart Channel Display is set to TRACKER PRESET, switch back to the [LIVE] display, then select the light and use the trackball to move it to a particular position. Then type:
[1][UPDATE][GROUP][1][*]

You will see that all of the intensity and attribute values for that channel have now been replaced with G 1. This means that they are using the value stored in Group 1. If you give Group 1 a name:
[GROUP][1][TEXT] down centre [*]

you will see that it now says 'down centre' instead of 'G 1'; if you look at Group 1 in preview, you will see that it now contains the values that the attributes were set to.

This is not a good example, however, since every attribute is saying it is 'down centre', which doesn't make much sense for colour, gobo or any other function apart from pan and tilt. When storing reference groups it is a good idea to separate different attribute types into different reference groups. This is easy to achieve using the console's function filter feature. Select channel 1 again and move all of the attributes so that they no longer say 'down centre' but instead show numeric values. Then type:
[1][UPDATE][GROUP][2][@ATT]{position}[*]
[GROUP][2][TEXT] piano [*]
[1][UPDATE][GROUP][101][@ATT]{colour}[*]
[GROUP][101][TEXT] red [*]

Now the light should say it is pointing at the piano and is in colour red - which makes much more sense. (note that @ATT is called ATTRIB on 300-series consoles).

Now record the light in that position and colour in a cue:
[CUE][1][RECORD]

When you look at that cue in preview, the labelling of the groups makes it easy to see what the light will be doing even if you don't have access to WYSIWYG or similar visualisation systems.