

Using and understanding “Indexed CVs”

The Titan’s continuously growing list of features presented us with a challenge: how to keep related CVs grouped together neatly and logically. “Indexed CVs” are the answer, because they enable us to accommodate new features without being forced to assign the CVs that control them to the next “available” CV number.

Let’s use our Mars light as an example; over the years, we have added new features to the Mars light over 15 times! If we were assigning CV numbers to these features conventionally in a linear manner, we’d have some Mars light controls in the CV30 range, others in the CV60 range, and still others up around CV210. This would make trying to configure your Mars light an absolute nightmare.

CV indexing enables us to organize and store related programming functionality under one “Master” CV. The confusing part to many modelers is the fact that access to a Master CV’s programmability can *only be gained through its indexes*. A Master CV can have as many as two such indexes. Referred to as “Primary” and “Secondary” indexes, they are expressed as decimal places in an indexed CV’s formula. Happily, the CV numbers of the Primary and Secondary indexes *remain the same, regardless of which Master CV we want to program*. Noting the following “rules” should help:

Rule 1: The Master CV contains all broadly-related functions. Master CV 55, for example, contains all lighting information and functionality.

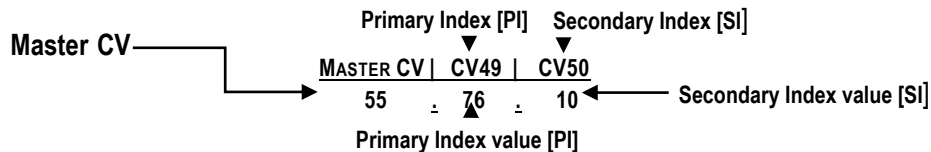
Rule 2: In any indexed CV, *only* the Master CV can be programmed to control a given function.

Rule 3: The same two Primary and Secondary indexes – CV 49 and CV 50 respectively – are always used to provide access to a Master CV, *regardless of which Master CV is to be programmed*.

Rule 4: The values programmed into the Primary and Secondary indexes *determine* what function will be programmable in the Master CV.

Understanding the numbers.

Let’s again use our Mars light to illustrate. A forward facing Mars light’s indexed CV formula is expressed as: CV55.76.10. Illustrated in table form, here’s what those numbers tell us:



Another (understandable) point of confusion for many modelers is the fact that in order to program Master CV55, you have to *first* enter the decimal values shown in its formula into its Primary and Secondary indexes – CV 49 and CV50 – and do so in reverse order, *from right to left*, when the formula is read right to left. In the above example then, we’ll first go to CV50 (the Secondary Index) and enter a value of “10,” followed by entering “76” into CV49 (the Primary Index). Once we’ve done that, we can go to CV55, our Master CV, and program its values to whatever level we prefer – which in this case is between 0-255 (its default value is 32).

Many people find it helpful to write out a small table to help keep the values straight. If we converted our example to read “normally” in the order in which its values must be entered, it would look like this:

CV50	CV49	CV55
10	76	0-255

And there are two more “rules”:

Rule 5: Not all indexed CVs require entry of a Secondary Index value. If a formula shows only one decimal place, as does the 51.0 formula of the Master System Volume, for example, the Secondary Index value is disregarded. In this example, we’d go directly to CV 49, our Primary Index, and enter “0.” We’d then go to CV51 — and have access to its 0-127 volume control programmability.

Rule 6: The best news: you only have to enter values into the Primary and Secondary Indexes the first time you program a Master CV. QSI decoders store the primary and secondary values once they’ve been entered — meaning you can make subsequent adjustments to a Master CV simply by going directly back to it. No need to re-enter CVs 50 and 49.