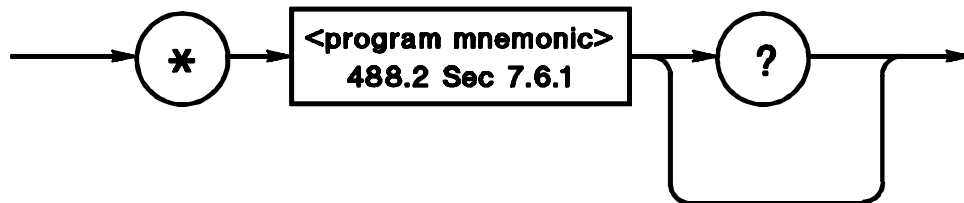


## 6 Program Headers

Program headers are keywords that identify the command. The program headers follow the syntax described in section 7.6 of *IEEE 488.2*. Instruments shall accept both upper and lowercase characters without distinguishing between the cases. Program headers consist of two distinct types, common command headers and instrument-control headers.

### 6.1 Common Command and Query Headers

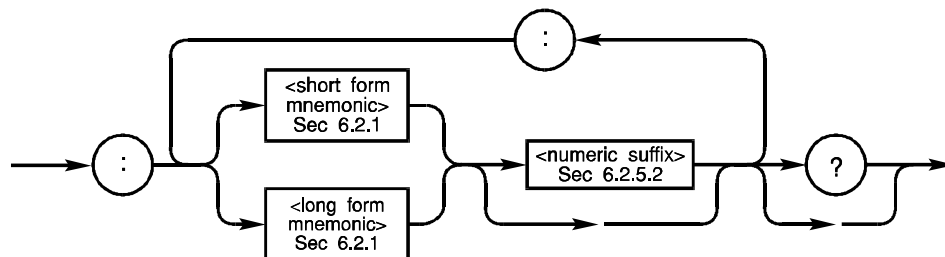
The common command and query program header syntax is specified in *IEEE 488.2* for use with the *IEEE 488.2*-defined common commands and queries. Their syntax is:



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### 6.2 Instrument-Control Headers

Instrument-control headers are used for all other instrument commands, typically those related to source and measurement control. The syntax for instrument-control headers is:



The definition of the effect of the colons in an instrument-control header is covered later in "Traversal of the Header Tree."

#### 6.2.1 Mnemonic Generation Rules

Each instrument-control header or keyword has both a long and a short form. A SCPI instrument shall accept only the exact short and the exact long forms. Sending a header that is not the short form, nor the complete long form to a SCPI instrument shall cause it to generate an error. *IEEE 488.2* limits the length of a header to 12 characters, including any numeric suffix that may appear. The long form header is either a single word or an abbreviation of a phrase. The short form header is an abbreviation of the long form header. In order to maintain a consistent set of mnemonics, SCPI defines the rules to generate a mnemonic.

The long form mnemonic is generated from either a single word or a phrase. If a single word is used, then that word becomes the mnemonic. If a phrase is used, then the mnemonic is the

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first letter of each word and the entire last word. For example the phrase “relative velocity” would generate RVELOCITY as the long form command header.

The short form mnemonic is usually the first four characters of the long form command header. The exception to this is when the long form consists of more than four characters and the fourth character is a vowel. In such cases, the vowel is dropped and the short form becomes the first three characters of the long form. For example, the short form of FREE is FRE, however, the short form of SWEEP is SWE. Note that elsewhere in this document a special notation is employed to differentiate the short form keyword from the longform of the same keyword. The long form of the keyword is shown, with the short form portion shown in uppercase characters, and the rest of the keyword is shown in lowercase characters. Thus Relative VELOCITY keyword would be shown as RVELOCITY.

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The short form generation rules imply that phrases such as “Jump Start” and “Jump Stop” are not allowed. Although the long forms JSTART and JSTOP are unique, the short form is the same in both cases, “JST.” This can be overcome by changing the phrases to “Jump Begin” and “Jump End”, thus creating unique long and short forms. Alternatively, the mnemonic JUMP can become an additional level in the tree, allowing START and STOP to become their own mnemonics, giving JUMP:START and JUMP:STOP.

The mnemonic generation rules allow keywords such as “TIME” and “TIMER” at the same tree level, since these are unique in both forms. This is not recommended since an unfamiliar user may select the wrong function unintentionally. If the two functions have the same number and type of parameters, the instrument may not signal an error, further exacerbating the situation.

All instrument command headers are allowed a numeric suffix to differentiate multiple instances of the same structure, such as multi-channel instruments. The numeric suffix is applied to both the long and short forms. For example, TRIG1 is the short form of TRIGGER1. A numeric suffix of 1 is implied on all instrument command headers that do not explicitly define a suffix; thus, TRIG is equivalent to TRIG1.

As a general rule, a mnemonic should contain no digits. Ending a short or long form mnemonic in a digit creates an ambiguity in separating the mnemonic from any added numeric suffix.

### 6.2.2 Building the Command Tree

SCPI commands are based on a hierarchical structure. This allows the same instrument-control header (keyword) to be used several times for different purposes, providing that the mnemonic occurs in a unique position in the hierarchy. That is, the mnemonic does not collide with any other mnemonics at the same level, or one level different where a default node exists.

Using hierarchical commands should eliminate the need for most multiword mnemonics. The use of multiword mnemonics is discouraged and they should only be used when:

- A). The use of the hierarchical scheme would add several additional layers to the tree, and