

Chapter 19

PROC MACONTROL Statement

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Chapter 19

PROC MACONTROL Statement

Overview

The PROC MACONTROL statement starts the MACONTROL procedure and it identifies input data sets.

After the PROC MACONTROL statement, you provide either an EWMACHART or an MACHART statement that specifies the type of moving average chart you want to create and the variables in the input data set that you want to analyze. For example, the following statements request a uniformly weighted moving average chart:

```
proc macontrol data=values;
    machart weight*lot / mu0    = 8.10
                       sigma0  = 0.05
                       span    = 5;
run;
```

In this example, the DATA= option specifies an input data set named VALUES that contains the *process* measurement variable WEIGHT and the *subgroup-variable* LOT.*

You can use options in the PROC MACONTROL statement to

- specify input data sets containing variables to be analyzed, parameters for calculating moving averages, or annotation information
- specify a graphics catalog for saving graphical output
- specify that charts are to be produced on graphics devices or line printers
- define characters used for features on charts produced on line printers

In addition to the chart statement, you can provide BY statements, ID statements, TITLE statements, and FOOTNOTE statements. If you are using a graphics device, you can also provide graphics enhancement statements, such as SYMBOL n statements, which are described in *SAS/GRAPH Software: Reference*.

Note: If you are using the MACONTROL procedure for the first time, you should also read the the “Getting Started” section on page 678 of Chapter 20, “EWMACHART Statement,” and the the “Getting Started” section on page 736 of Chapter 21, “MACHART Statement.”

*In Release 6.12 and previous releases of SAS/QC software, the keyword GRAPHICS was required in the PROC MACONTROL statement to specify that the chart be created with a graphics device. In Version 7, you can specify the LINEPRINTER option to request line printer plots.

Syntax

The syntax for the PROC MACONTROL statement is as follows:

PROC MACONTROL < options >;

The PROC MACONTROL statement starts the MACONTROL procedure, and it optionally identifies various data sets and requests graphics output. You can specify the following *options* in the PROC MACONTROL statement. The marginal notes *Graphics* and *Line Printer* identify options that apply to graphics devices and line printers, respectively.

ANNOTATE=SAS-data-set

ANNO=SAS-data-set

specifies an input data set that contains appropriate annotate variables, as described in *SAS/GRAPH Software: Reference*. The ANNOTATE= option allows you to add features to the moving average chart (for example, labels that explain out-of-control points). The ANNOTATE= data set is used only when the chart is created using a graphics device; it is ignored when the LINEPRINTER option is specified.

The data set specified with the ANNOTATE= option in the PROC MACONTROL statement is a “global” annotate data set in the sense that the information in this data set is displayed on every chart produced in the current run of the MACONTROL procedure.

ANNOTATE2=SAS-data-set

ANNO2=SAS-data-set

specifies an input data set that contains appropriate annotate variables that add features to the trend chart (secondary chart) produced with the TRENDVAR= option in the EWMAHART or MACHART statement.

DATA=SAS-data-set

names an input data set that contains raw data (measurements) as observations. If the values of the *subgroup-variable* are numeric, you need to sort the data set so that these values are in increasing order (within BY groups). The DATA= data set can contain more than one observation for each value of the *subgroup-variable*.

You cannot specify a DATA= data set with a HISTORY= or TABLE= data set. If you do not specify an input data set, PROC MACONTROL uses the most recently created data set as a DATA= data set. For more information, see “DATA= Data Set” in the appropriate chart statement chapter.

FORMCHAR(index)=’string’

defines characters used for features on charts produced on a line printer, where

index

is a list of numbers ranging from 1 to 17. The list identifies which features are controlled with the *string* characters. By default, *index* is omitted, and the FORMCHAR= option gives a *string* for all 17 features.

string

Graphics

Graphics

Line Printer

gives characters for features in *index*. Any character or hexadecimal string can be used.

The features associated with values of *index* are as follows:

Value of <i>index</i>	Description of Character	Chart Feature
1	vertical bar	frame
2	horizontal bar	frame, central line
3	box character (upper left)	frame
4	box character (upper middle)	serifs, tick (horizontal axis)
5	box character (upper right)	frame
6	box character (middle left)	not used
7	box character (middle middle)	serifs
8	box character (middle right)	tick (vertical axis)
9	box character (lower left)	frame
10	box character (lower middle)	serifs
11	box character (lower right)	frame
12	vertical bar	control limits
13	horizontal bar	control limits
14	box character (upper right)	control limits
15	box character (lower left)	control limits
16	box character (lower right)	control limits
17	box character (upper left)	control limits

Not all printers can produce the characters in the preceding list. By default, the form character list specified by the SAS system FORMCHAR= option is used; otherwise, the default is FORMCHAR='|—+|—|====='. If you print to a PC screen or if your device supports the ASCII symbol set (1 or 2), the following is recommended:

```
formchar='B3,C4,DA,C2,BF,C3,C5,B4,C0,C1,D9,BA,CD,BB,C8,BC,D9'X
```

Note that you can use the FORMCHAR= option to temporarily override the values of the SAS system FORMCHAR= option. The values of the SAS system FORMCHAR= option are not altered by the FORMCHAR= option in the PROC MACONTROL statement.

GOUT=*graphics-catalog*

specifies the graphics catalog for graphics output from PROC MACONTROL. This is useful if you want to save the output. The GOUT= option is used only when the chart is created using a graphics device; it is ignored when the LINEPRINTER option is specified.

Graphics

HISTORY=*SAS-data-set*

HIST=*SAS-data-set*

names an input data set that contains subgroup summary statistics (means, standard deviations, and sample sizes). Typically, this data set is created as an OUT-HISTORY= data set in a previous run of PROC MACONTROL or PROC SHEWHART, but it can also be created with a SAS summarization procedure such as PROC MEANS.

If the values of the *subgroup-variable* are numeric, you need to sort the data set so that these values are in increasing order (within BY groups). A HISTORY= data set can contain only one observation for each value for the *subgroup-variable*.

You cannot use a HISTORY= data set with a DATA= or TABLE= data set. If you do not specify an input data set, PROC MACONTROL uses the most recently created data set as a DATA= data set. For more information on HISTORY= data sets, see “HISTORY= Data Set” in the appropriate chart statement chapter.

LIMITS=SAS-data-set

names an input data set that contains the control limit parameters for the moving average chart. Each observation in a LIMITS= data set contains the parameters for a *process*.

If you are using Release 6.09 or an earlier release of SAS/QC software, you must specify the options READLIMITS or READINDEX= in the chart statement to read the parameters from the LIMITS= data set. In Release 6.10 and later releases, these options are not needed.

For details about the variables needed in a LIMITS= data set, see “LIMITS= Data Set” in the appropriate chart statement chapter.

If you do not provide a LIMITS= data set, you must specify the parameters with options in the chart statement.

LINEPRINTER

requests that line printer charts be produced. By default, the procedure creates charts for a graphics device.

TABLE=SAS-data-set

names an input data set that contains subgroup summary statistics and control limits. Each observation in a TABLE= data set provides information for a particular subgroup and *process*. Typically, this data set is created as an OUTTABLE= data set in a previous run of PROC MACONTROL.

You cannot use a TABLE= data set with a DATA= or HISTORY= data set. If you do not specify an input data set, PROC MACONTROL uses the most recently created data set as a DATA= data set. For more information, see the “TABLE= Data Set” section in the appropriate chart statement chapter.

Input and Output Data Sets

Figure 19.1 summarizes the data sets used with the MACONTROL procedure.

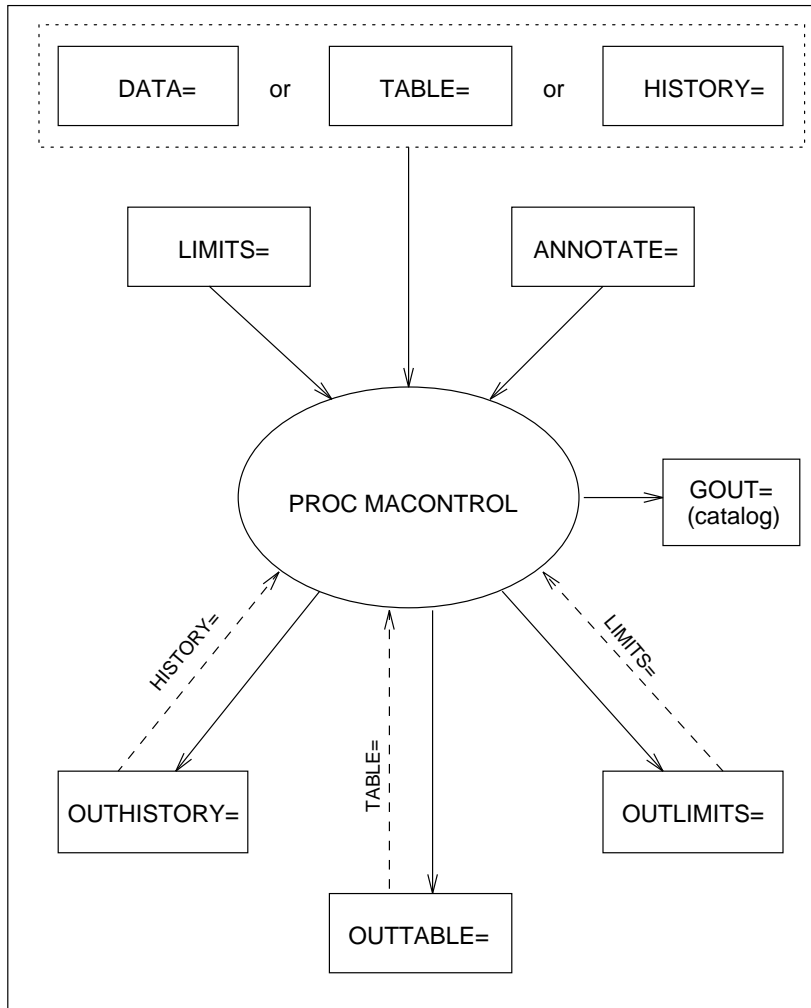


Figure 19.1. Input and Output Data Sets in the MACONTROL Procedure