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DMS Titrino 716

716.002X program

The new possibilities of the 716.002X program are described in this supplement to the 8.716.1013 Instructions for Use.

New possibilities:

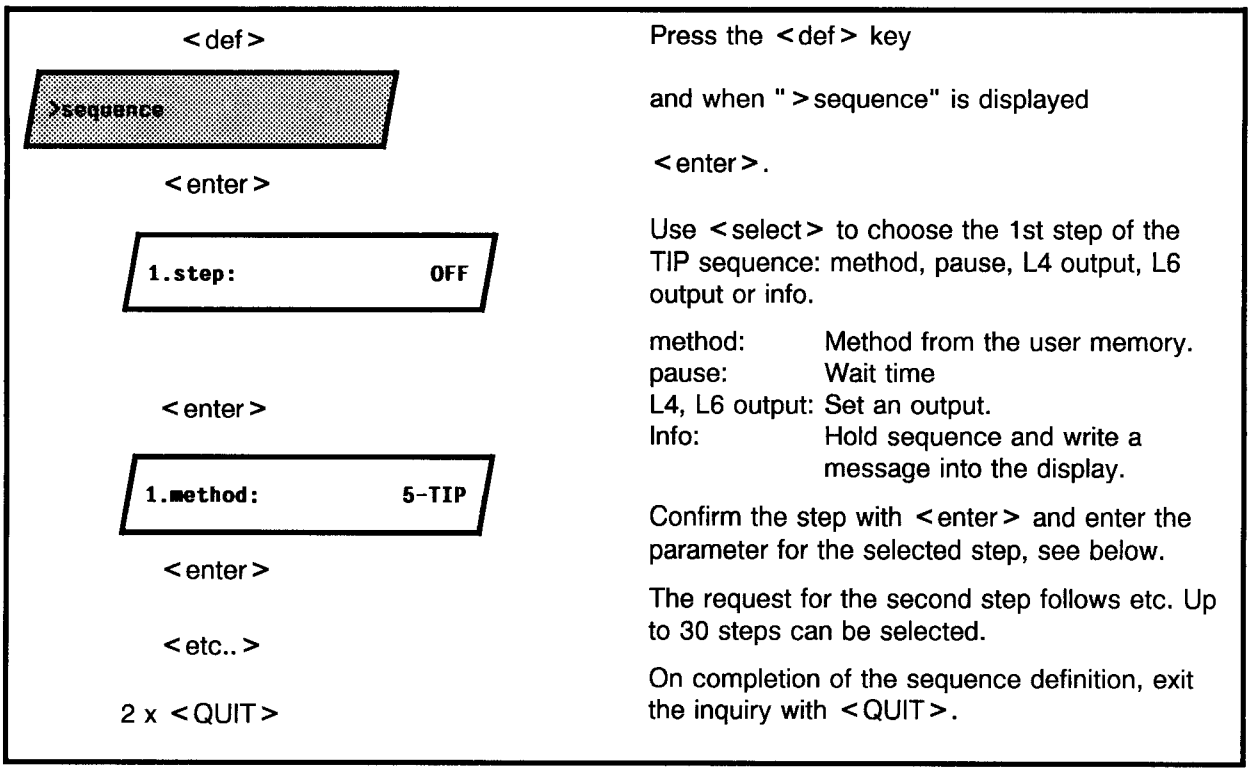
95.01 Ti

8.716.1113

1 TIP, Titration Procedure

TIP (**Ti**tration **P**rocedure) is used to link several commands in a sequence. TIP is selected with the <mode> and <enter> keys. TIP is an "empty shell" in which the sequence of the determination must be defined.

Definition of the determination sequence



Press the <def> key

and when ">sequence" is displayed

<enter>.

Use <select> to choose the 1st step of the TIP sequence: method, pause, L4 output, L6 output or info.

method:	Method from the user memory.
pause:	Wait time
L4, L6 output:	Set an output.
Info:	Hold sequence and write a message into the display.

Confirm the step with <enter> and enter the parameter for the selected step, see below.

The request for the second step follows etc. Up to 30 steps can be selected.

On completion of the sequence definition, exit the inquiry with <QUIT>.

The following commands can be used:

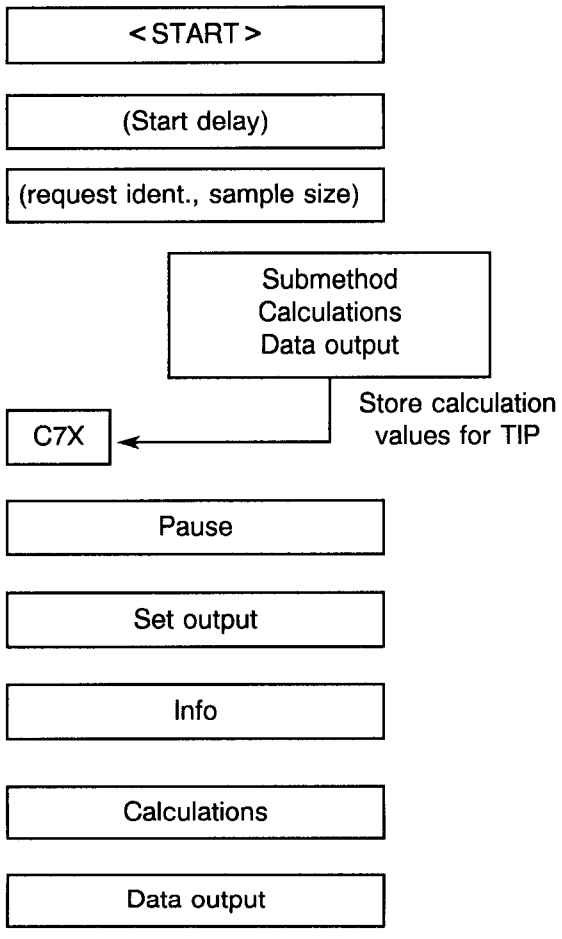
Command	Meaning	Input range
Method	Method from the user memory. This method runs as a submethod.	Name
Pause	Pause time. The pause time can be stopped with <QUIT>. <clear> sets "inf" (= infinitely long pause time).	0...999 999 s, inf.
L4 output	Set L4 output (pin 3) of the remote socket. active = 0 V, inactive = 5 V, pulse > 100 ms, off = output is not used. Important: A pulse (e.g. from a monitoring output in a submethod) can set an active output to inactive! At the end of the TIP method, the outputs are set to "inactive".	active, inactive, pulse, off
L6 output	Set output L6 (pin 1) of the remote socket. Cable 716 DMS Titrino (L6) - 6.2139.000 Dosimat. Important: A pulse (e.g. an activate pulse in a submethod) can set an active output to inactive! At the end of the TIP method, the outputs are set to "inactive".	active, inactive, pulse, off
Info	Message in the display . The TIP sequence is held and the message displayed. Continue the sequence with <START>, <QUIT> or <enter>.	up to 16 characters

The parameters of the sequence can be viewed and changed at any time under the <parameters> key .

Sequence of TIP

As there is no preset sequence of TIP, in what follows the procedure is illustrated by a sequence that contains all available commands.
The start of the sequence depends on the application and can be configured with the following parameters (see schematic representation below):

- Start delay (setting under <configuration>, > auxiliaries)
- Request of the sample identifications and the sample size following titration start. The data apply to all calculations in the submethods and in TIP.



Following the start, the start delay time is allowed to elapse.

After the request of "ident" and "sample size", the individual sequence steps are processed.

Submethods are processed according to their parameters. They run to completion, incl. calculations and data output (e.g. curves). The determination data of the submethod are overwritten in the next sequence step of TIP. Those values which are needed for higher-level calculations must therefore be assigned to temporary variables C7X in the submethod.

Pause time allowed to elapse.

Outputs of the remote socket can be set.

A message can be written in the display. The sequence is held until it is continued manually (with <START>, <QUIT> or <enter>).

Higher level calculations in TIP.

Data output in TIP (TIP contains no more determination data, i.e. curves must be outputted within the submethods).

Preparation of submethods for use in TIP

All titration data, i.e. curves and lists of measured points must be outputted in the submethod as they are overwritten on return to TIP.
Individual values from the submethod, e.g. endpoints or calculated results must be stored as temporary variables C7X. This allows them to be used in TIP for further calculations.
Reevaluations of data of a submethod are not possible in TIP. The submethods should thus be thoroughly wet tested before they are used in TIP.

Assignment of temporary variables in the submethod:

6 x <def>	Press the <def> key until the display
>temporary variables	and when " >temporary variable" is shown
<enter>	<enter>.
C7?	Temporary variables from C70...C79 can be stored: Enter a number between 0 and 9. and assign the quantity from the submethod which should be used in the TIP calculations: Endpoints EPX, results RSX or variables CXX.
2 x <QUIT>	Exit the request with <QUIT> and store the submethod in the user memory.

Calculations in TIP

In TIP general calculations can be performed with variables C7X from different submethods.

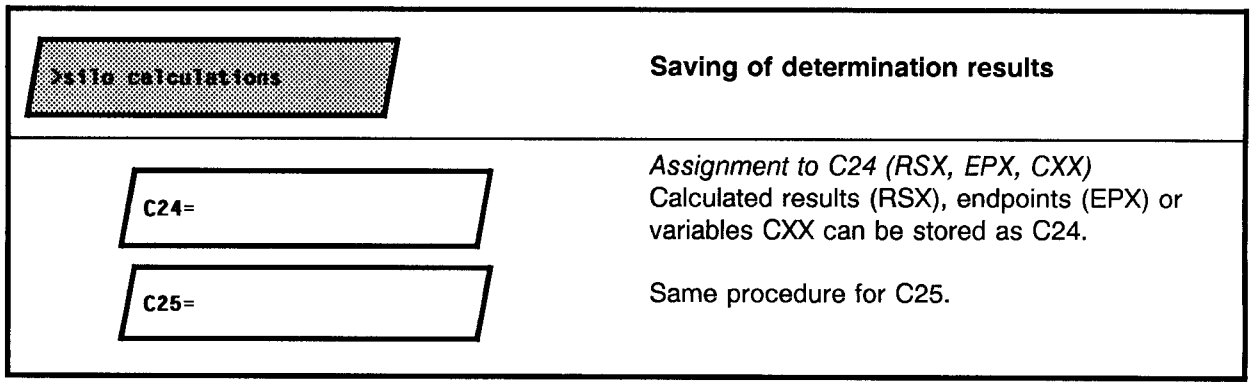
Note:
It is advisable to perform the calculations within TIP if at all possible as only these can be recalculated "dry" after the determination, e.g. with a different sample size.

2. Saving determination results and silo calculations

Saving determination results

If the sample-specific data of the silo memory should be kept after the determination and supplemented by results, the following entries are necessary:

1. In the method under the <def> key
   Assignment of the determination results to C24 and/or C25:



2. In the silo memory, <smpl data> key (when the silo memory is switched in):
   "save lines: on"

Important:
Ensure that there is still sufficient memory for saving the results C24 and C25. (In the report <print> <user meth> <enter> the number of free bytes is shown.) Result name, value and unit are stored. The memory requirements can be estimated as follows:
Result with text (8 characters) and unit (5 characters): 32 bytes
Measured value C40, value without unit: 22 bytes

After several samples have been processed, the silo memory report can have the following appearance (printout with <print> <silo>):

```
 'si
716 DMS Titrino    OP1/101     716.0020
date 1997-09-27  time  08:54         14
>silo
  cycle lines:             OFF
  save lines:               ON
 sl  method  id 1/C21 id 2/C22 id 3/C23   C00        C24          C25
+ 1    11-2      A/12 94-09-12          0.233g    0.142ml       98.53%
+ 2    11-2      A/13 94-09-12          0.286g    0.138ml       95.75%
+ 3    11-2      A/14 94-09-12          0.197g    0.145ml      100.61%
  4    11-2      A/15 94-09-12          0.288g       NV           NV
/ 5    11-2      A/16 94-09-12          0.263g       NV           NV
```

Silo lines have been processed, results saved

Silo lines not yet processed

The silo lines can be marked as follows (at very left of report):
+ Silo line has been processed.
* A silo line not yet processed has been deleted.
– A processed silo line has been deleted and hence removed from the silo calculations.
/ The last processed silo line. Recalculated results are modified in this line (e.g. with a new sample size).
No marking: The silo line is awaiting processing.

Silo calculations

Mean value and standard deviation of the results available in the silo memory can subsequently be calculated over the entire series.

The following details can be entered in the method under the <def> key:

>silo calculations	**Silo calculations**
C24=	*Assignment to C24 and C25*
C25=	
match id: OFF	*Which sample identifications must match for the combination of the sample results (id1, id1&id2, all, OFF)* "OFF" means no matching in ids, all samples which have been processed with the same method are combined, see examples below.

Starting from the following silo report:

```
 'si
716 DMS Titrino    OP1/101     716.0020
date  94-09-27   time  08:54
>silo
  cycle lines:         OFF
  save lines:           ON
 sl  method  id 1/C21 id 2/C22 id 3/C23   C00        C24          C25
+ 1    11-2      A/12 94-09-12          0.233g    0.142ml      98.53%   ←
+ 2    0-15      A/13 94-09-12          0.286g   0.9976           NV
+ 3    0-15      A/13 94-09-12          0.197g   0.9947           NV
+ 4    11-2      A/12 94-09-12          0.288g    0.138ml      95.75%   ←
+ 5    11-2      A/15 94-09-12          0.263g    0.145ml     100.61%   ←
```

Assignment for C24 only.

with "match id: off" the following silo calculation report (<print> <select> "scalc full") is obtained:

```
:
 method  id 1/C21 id 2/C22 id 3/C23          mean          +/-s  n
   11-2         *        *        *     EP1  0.142ml       0.0035  3
                                      content  98.30%        2.438  3
   0-15         *        *        *   titer 0.9962       0.00205  2
```

All samples which have been processed with the same method are combined.

With "match id: id1" the following silo calculation report is obtained:

```
:
 method   id 1/C21 id 2/C22 id 3/C23          mean          +/-s  n
   11-2       A/12        *        *     EP1  0.140ml       0.0028  2
                                      content  97.14%         1.966  2
   0-15       A/13        *        *   titer 0.9962       0.00205  2
   11-2       A/15        *        *     EP1  0.145ml         0.000  1
                                      content 100.61%         0.000  1
```

Samples which have been processed with the same method and have the same id1 are combined.

The short silo calculation report (<print> <select> "scalc srt") contains only calculations for the least, current sample.

```
:
 method    id 1/C21 id 2/C22 id 3/C23          mean          +/-s  n
   11-2       A/15        *        *      EP1  0.145ml       0.000  1
                                        content 100.61%       0.000  1
```

The mean values of the silo calculations are available for further result calculations as C26 and C27 and can be used in the Titrino in formulas.
Mean value of C24 → C26
Mean value of C25 → C27

Important:

- If work is performed with silo calculations, the method name must be entered in the silo memory. Results will be overwritten in the silo on recalculation.
  If you do not wish such an entry, e.g. because you work off an urgent sample between a series, disconnect the silo and work with a method which has a different name from the one you use in the silo.
- Calculations and assigments are carried out in the following order:
  . Calculation of the results RSX
  . Assignment of temporary variables C7X for TIP
  . Calculation of means MNX
  . Assignment of silo results C24 and C25
  . Silo calculations
  . Assignment of means C26 and C27 from silo calculations
  . Assignment of common variables C3X

3. Various functions

- You can connect HP printers (e.g. HP Desk Jet; 6.2125.050 cable) to the Titrino. Select the HP printer with key <configuration>, >peripheral units, send to: HP.

- Measuring point lists can have up to 500 measuring points.

- In the report printouts you will find an identification line with
  the Titrino type (716 DMS Titrino)
  an individual instrument identification (e.g. ON2/133)
  the program version (716.0020)