Appendix

A Example 1

The course of PROG. EXAMPLE 1 is shown in fig. 49:

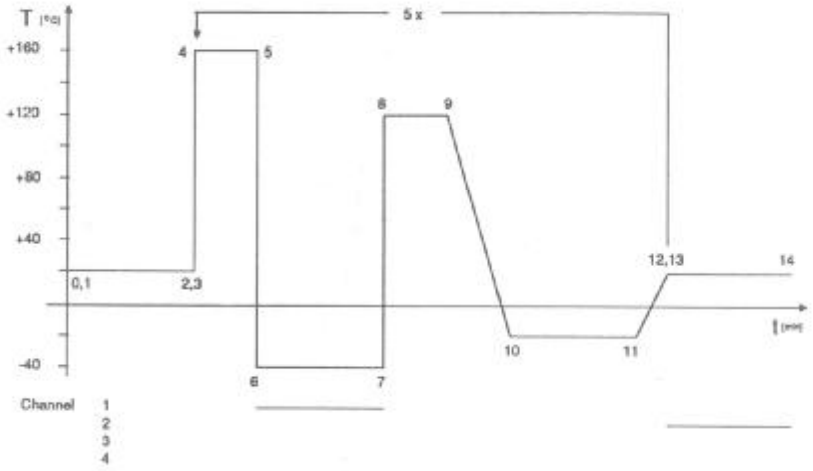

Fig. 49 Example 1

0 - 3 Constant +20°C.
3 - 4 Temperature change with maximum heating power.
4 - 5 Stabilization at +160°C.
5 - 6 Temperature change with maximum cooling power. Activation of the wait function, as the test specimen is to be switched on when the temperature has been reached. Activation of the test specimen via channel 1.
6 - 7 Stabilization and 15 min. test at -40°C.
7 - 8 Temperature change with maximum heating power. Addition dehumidification is switched on to prevent condensation on the test specimen.
8 - 9 Stabilization at +120°C.
9 - 10 Regulated ramp to -20°C.
10-11 Stabilization at -20°C.
11-12 Regulated ramp to +20°C with test speciman control sensor and wait function.
12- 2 The cycle is repeated 5 times.
13-14 Stabilization at +20°C and measuring. Measuring activated via channel 2.

The following programming sequence is described in detail in chapter 4.4.1 as of page 70.

EDIT PROGRAM	Call up
EDIT	Program editor
SELECT PROGRAM	Select program 10
START EDIT	Call up program 10
EDIT HEAD	Edit program head, see page 105

```
Program - no.  10 :  Head

Name:    PROG. EXAMPLE 1
Temperature limit   min. :     -45.0°C
Temperature limit   max. :     165.0°C
Refer.par. wait function :     Cont.sens.

 INPUT | ↑↑↑↑↑ | ↓↓↓↓↓ |       | RETURN
```

```
Program - no.  10 :  Head

Tolerance wait function  :       5  °C
Max. toler. failure time :      10 min
Time base program        :  Minutes
Fan speed ventilator     :     100%

 INPUT | ↑↑↑↑↑ | ↓↓↓↓↓ |       | RETURN
```

EDIT LINES — Edit program lines

```
 0 |  0   min |   |  20.0°C |  0.0% | 00000000000
 1 | 200 min  |   |  20.0°C |  0.0% | 00000000000
 2 | Loop  no. 1             Begin    5   time
 3 |  0   min |   | 160.0°C |  0.0% | 00000000000
 4 | 100 min  |   | 160.0°C |  0.0% | 00000000000

  Time
 INPUT | NEWLINE | DELETE |  LOOP  | RETURN
```

```
 5 |   0 min | W | -40.0°C |  0.0% | 00000000000
 6 | 200 min |   | -40.0°C |  0.0% | 00000001000
 7 |  0   min|   | 120.0°C |  0.0% | 01000000000
 8 | 100 min |   | 120.0°C |  0.0% | 01000000000
 9 | 100 min |   | -20.0°C |  0.0% | 00000000000

  Time
 INPUT | NEWLINE | DELETE |  LOOP  | RETURN
```

```
10 | 200 min |   | -20.0°C |  0.0% | 00000000000
11 |  50 min | W |  20.0°C |  0.0% | 00000000000
12 | Loop  no. 1     End
13 | 200 min |   |  20.0°C |  0.0% | 00000000100
14 |  0   min|   |  20.0°C |  0.0% | 00000000000

  Time
 INPUT | NEWLINE | DELETE |  LOOP  | RETURN
```

SAVE PROGRAM — Save program

B **Example 2**

The course of PROG. EXAMPLE 2 is shown in fig. 50:

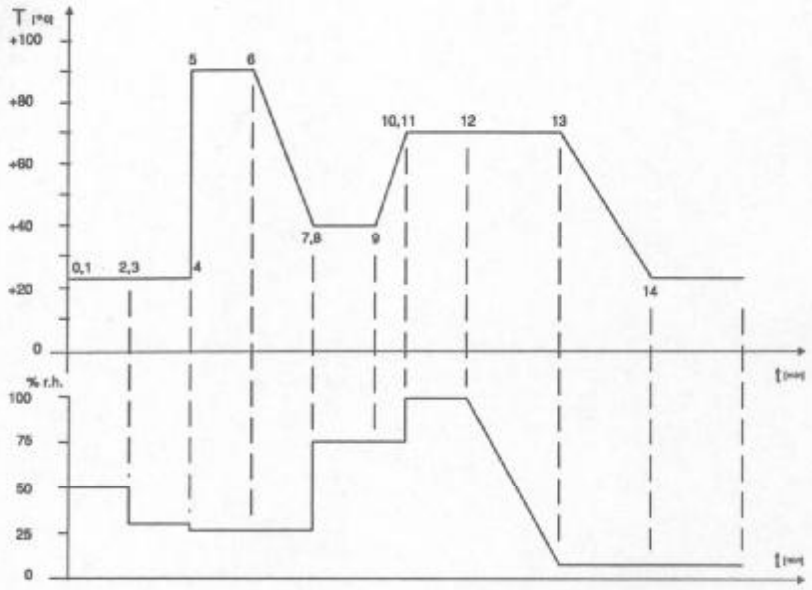

Fig. 50 Example 2

0 - 2 Constant +23°C / 50% r.h.
3 - 4 Constant +23°C / 30% r.h.
4 - 5 Temperature change with maximum heating power and undefined humidity.
5 - 6 Stabilization at +90°C and 25% r.h.
6 - 7 Regulated cooling at a constant humidity of 25% r.h.
7 - 9 Stabilization at +40°C and 75 % r.h.
9 - 10 Regulated ramp to +70°C at a constant humidity of 75% r.h.
10- 12 Stabilization at +70°C with high humidity 98% r.h.
12- 13 Humidity reduction with wait function
13- 14 Regulated ramp to +23°C and constant humidity of 10% r.h.
14 Deep humidification range 23°C / 10% r.h.

The following programming sequence is described in detail in chapter 4.4.1 as of page 70.

EDIT PROGRAM	Call up
EDIT	program editor
SELECT PROGRAM	Select program 20
START EDIT	Call up program 20
EDIT HEAD	Edit program head, see page 104

Program - no. 20 : Head				
Name: PROG. EXAMPLE 2				
Temperature limit min. :			15.0 °C	
Temperature limit max. :			100.0 °C	
Refer.par. wait function :			Humidity	
INPUT	↑↑↑↑↑	↓↓↓↓↓		RETURN

Program - no. 20 : Head				
Tolerance wait function :			5	
Max. toler. failure time :			10 min	
Time base program :			Minutes	
Fan speed ventilator :			100%	
INPUT	↑↑↑↑↑	↓↓↓↓↓		RETURN

EDIT LINES

Edit program lines

0	0 min		23.0°C	50.0%	10000000000
1	100 min		23.0°C	50.0%	10000000000
2	0 min		23.0°C	30.0%	10000000000
3	100 min		23.0°C	30.0%	10000000000
4	0 min		90.0°C	25.0%	10000000000
Time					
INPUT	NEWLINE	DELETE	LOOP	RETURN	

5	100 min		90.0°C	25.0%	10000000000
6	100 min		40.0°C	25.0%	10000000000
7	0 min		40.0°C	75.0%	10000000000
8	100 min		40.0°C	75.0%	10000000000
9	50 min		70.0°C	75.0%	10000000000
Time					
INPUT	NEWLINE	DELETE	LOOP	RETURN	

10	0 min		70.0°C	98.0%	10000000000
11	100 min		70.0°C	98.0%	10000000000
12	150 min	W	70.0°C	10.0%	11000000000
13	150 min		23.0°C	10.0%	11000000000
14	150 min		23.0°C	10.0%	11000000000
Time					
INPUT	NEWLINE	DELETE	LOOP	RETURN	

SAVE PROGRAM

Save program

C Standard programs

MIL-202D M 106C TP 104

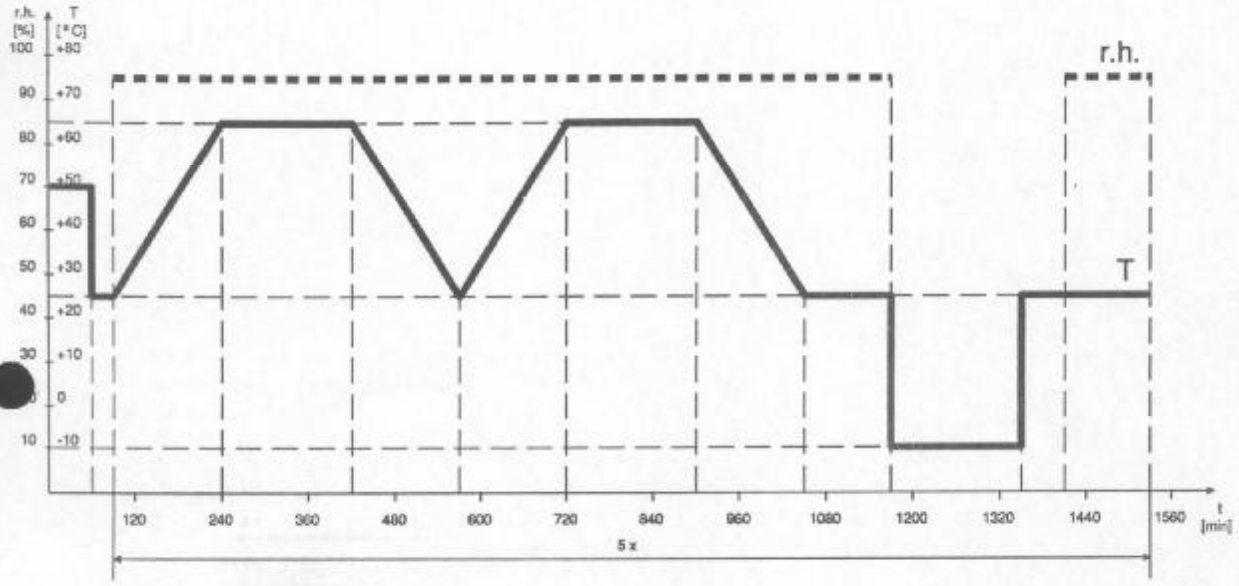

Fig. 51 Standard program MIL-202D M 106C TP 104

MIL-810B M507 P4

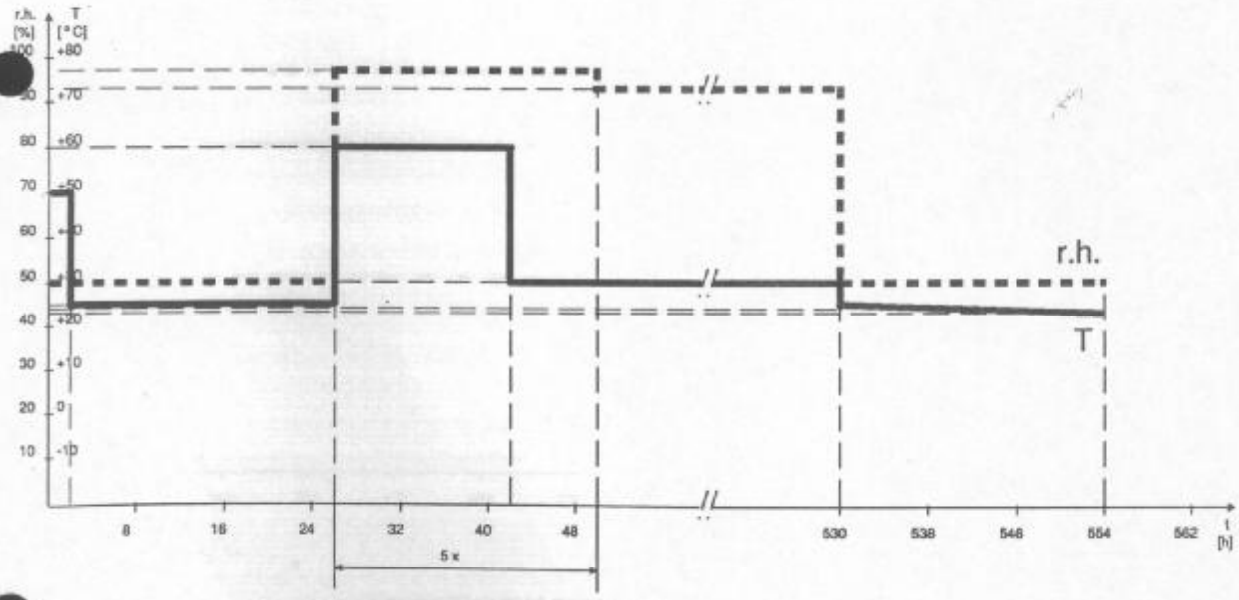

Fig. 52 Standard program

IEC 68-2-38 TP 106

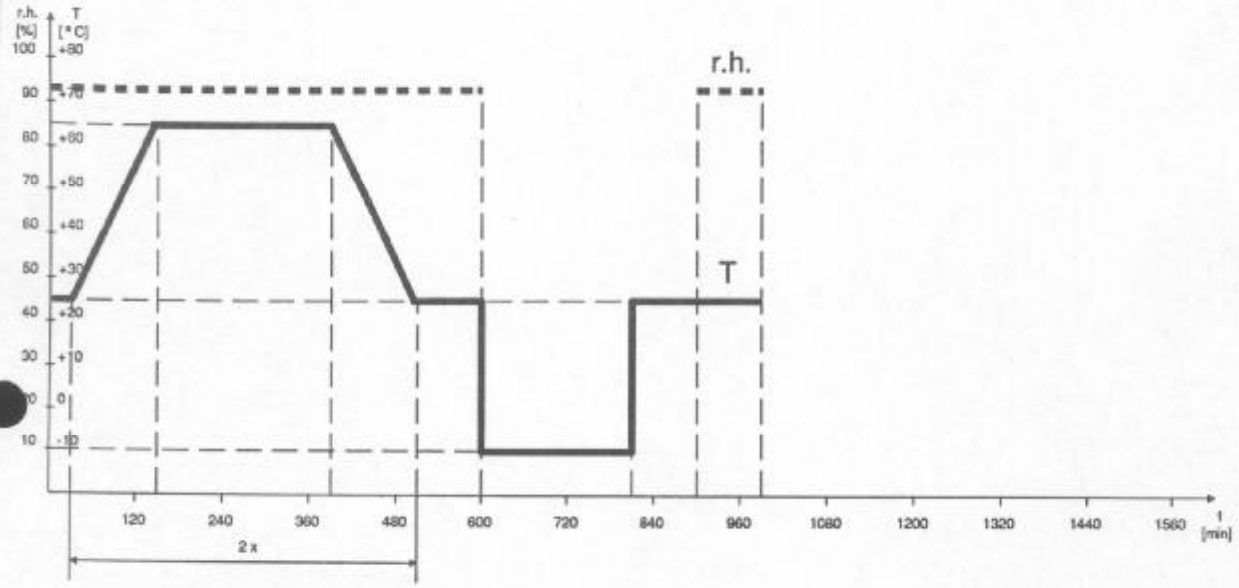

Fig. 53 Standard program IEC 68-2-38 TP106

IEC 68-2-30 V1 TP107

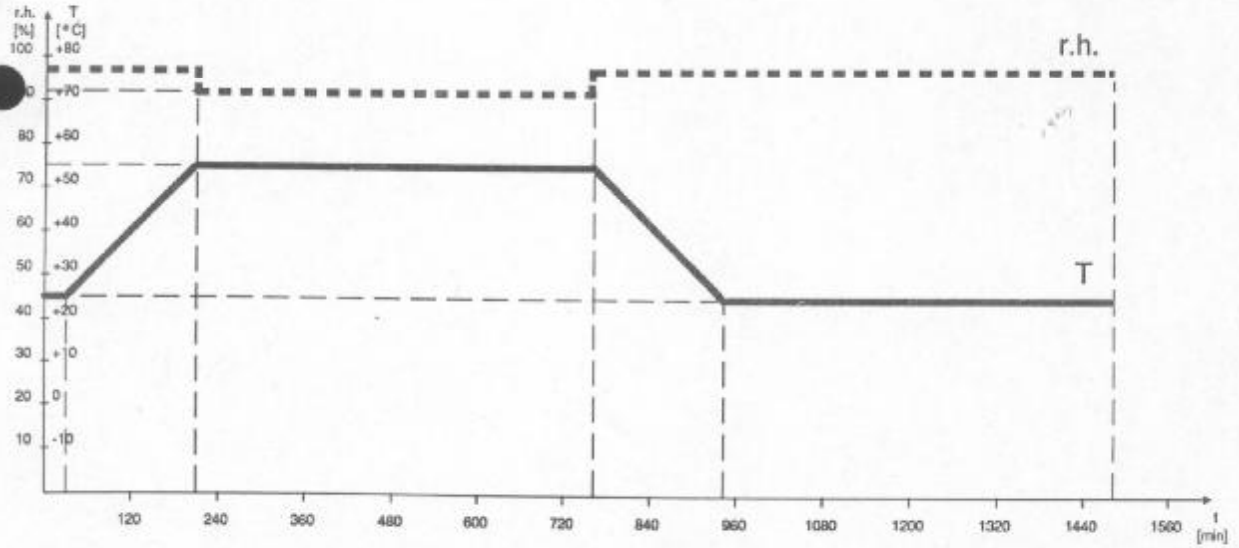

Fig. 54 Standard program IEC 68-2-30 V1 TP107

D ASCII protocol

Commands may be transferred from a PC to the HC control with the protocol in ASCII format.
Operation via the RS 232 interface requires setting in ASCII mode, see p. 46.

At the PC the following adjustments have to be made:

8	Databits
1	Stopbit
	no parity

The ASCII protocol is limited to simple system settings and the display of values.

PC → HC control

`$aacddddddde`	Max. 256 characters per line
`$`	Start character
`aa`	Two-figure address, e.g. 00 = address 0
`c`	1-byte command
`ddd`	Data, all characters possible except CR and $
`e`	End character (CR)

HC control → PC

`dddddd ... ddddde`

Read out set and actual values

PC → HC control

`I`	1-byte command

HC control → PC

`ttt.t`	Set temperature value
`TTT.T`	Act. temperature value
`fff.f`	Set humidity value
`FFF.F`	Act. humidity value
`eee.e`	External sensor
`kkkk`	Customer outputs*
`KKKK`	Customer inputs*
`F`	Combined alarm*
`S`	Start
`H`	Humidity on*
`E`	External dryer
`Z`	Additional dehumidification*
`P`	Test space fan*
`W`	Water low warning*
`w`	Humidity range exceeded warning*

* 0 = Off, 1 = On

Example:

```
ttt.t TTT.T fff.f FFF.F eee.e kkkkKKKK FSHEZPWw
080.0 075.6 050.0 048.9 074.3 10100011 01100100 CR
```

Set point and system settings:

PC → HC control

E	1-byte command
ttt.t	Temperature set point
fff.f	Humidity set point
kkkk	Customer outputs*
S	Start*
H	Humidity on*
E	External dryer*
Z	Additional dehumidification*
P	Test space fan*
dd	Display number
00	No change
01	Manual temperature/humidity set/act. Control sensor
02	Manual temperature/humidity set/act. Free sensor
03	Control sensor large display
04	Free sensor large display
05	Humidity large display
11	As for 01 but for automatic mode
12-14	As for 02 to 04 but for automatic mode
16	Program status
RRR	Test space fan speed in %
A	Keyboard
	1 = Disabled
	2 = Enabled
	*0 = Off, 1 = On

Example:

```
    ttt.t fff.f kkkkSHEZP dd RRR A C
$00E080.0 050.0 101011001 00 100 2 0 CR
```

HC control → PC

0	ok