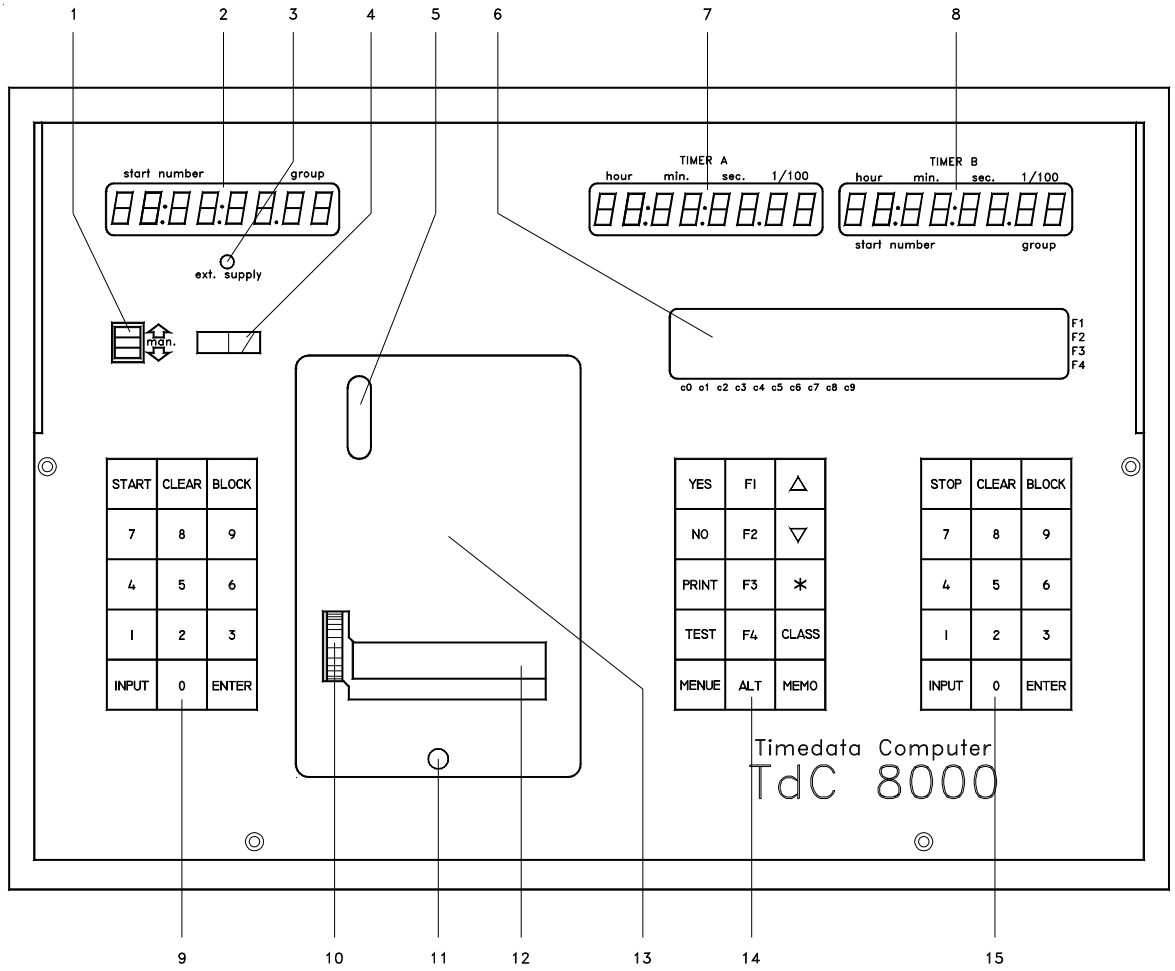
1
2
3
4
5
6
7
8
start number
group
ext. supply
TIMER A
hour
min.
sec.
1/100
TIMER B
hour
min.
sec.
1/100
start number
group
man.
F1
F2
F3
F4
c0 c1 c2 c3 c4 c5 c6 c7 c8 c9
START
CLEAR
BLOCK
7
8
9
4
5
6
1
2
3
INPUT
0
ENTER
YES
FI
△
NO
F2
▽
PRINT
F3
*
TEST
F4
CLASS
MENUE
ALT
MEMO
STOP
CLEAR
BLOCK
7
8
9
4
5
6
1
2
3
INPUT
0
ENTER
Timedata Computer
TdC 8000
9
10
11
12
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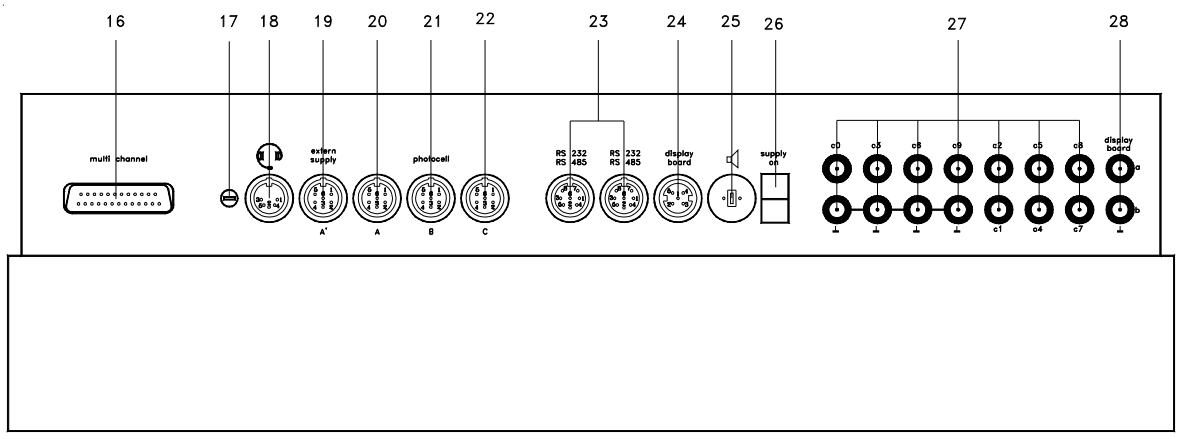
14
15


16
17
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19
20
21
22
23
24
25
26
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28
multi channel
extern supply
photocell
RS 232
RS 485
RS 232
RS 485
display board
supply on
display board
A'
A
B
C
c0
c3
c6
c9
c2
c5
c8
c1
c4
c7

Operation elements and connectors

1 Switch for start number input with three positions:
up: increment up automatically as each racer starts
middle: manual input of start numbers with keyboard (9)
down: increment down automatically as each racer starts

2 Display for the start

3 External supply LED status light

4 Meter for monitoring power supply, alignment of the photocell (c1 to c9)

5 View port to examine paper supply

6 Info-display 4 x 40 alphanumeric characters

7 Display that shows the running and net time that corresponds with the start number input on the finish keyboard (15)

8 Display that show the start number input for finish

9 Start keyboard:
START manual start impulse
CLEAR clear false start
BLOCK blocks start impulses for as long as you press it
INPUT edit start times
ENTER confirm input
0 to 9 numeric keys to input start numbers for the start or editing start times

10 paper advance wheel

11 cover release button to open the printer cover (13) to change the paper

12 paper cutter

13 printer cover (open with cover release button 11)

14 Function keyboard:
YES key to confirm YES/NO questions
NO key to deny YES/NO questions
PRINT to switch the printer on and off
PRINT: Buffer mode on or off
Alt + PRINT: Printer on or off
TEST info-display (6) shows the device test
^ key to go up
v key to go down
* key for special functions
CLASS key to make a classement
MEMO to activate the memo function if more competitors reach the finish at the same time
MENU press this key first, followed by another to activate a special function: With <ALT> and <MENU> you get into the main menu
Alt press this key first, followed by another to activate a special function: With <ALT> and <PRINT> you toggle the printer on and off.
F1 function key 1 on info-display
F2 function key 2 on info-display
F3 function key 3 on info-display
F4 function key 4 on info-display

15 Finish keyboard:
STOP manual stop impulse
CLEAR clear false finish
BLOCK blocks finish impulses for as long as you press it
INPUT edit of finish times
ENTER confirm input
0 to 9 numeric keys to input start numbers for the finish or editing finish times

16 Connection for Extender and Multi Channel (channel 0 to 9)

17 Volume for headset

18 Jack for the headset

19 DIN-jack mainly used to connect the finish photocell (inputs c0, c1, c2). Connection of power supply is possible. Identical with DIN-jack (20)

20 DIN-jack mainly used to connect the finish photocell (inputs c0, c1, c2). Connection of power supply is possible. Identical with DIN-jack (19)

21 DIN-jack mainly used to connect the a intermediate photocell (inputs c3, c4, c5). Connection of power supply is possible.

22 DIN-jack mainly used to connect the a intermediate photocell (inputs c6, c7, c8). Connection of power supply is possible.

23 Two identical DIN-jacks with RS-232 and RS-485 interface.

24 DIN-jack to connect a ALGE display board.

25 DIN-jack to connect a speaker (e.g. show jumping)

26 On / Off - switch

27 banana socket for all 10 timing channels. The four black jacks are common grounds for all channels.
c0 Start channel
c1 finish channel
c2 intermediate time 1
c3 intermediate time 2
c4 intermediate time 3
c5 intermediate time 4
c6 intermediate time 5
c7 intermediate time 6
c8 intermediate time 7
c9 intermediate time 8

28 Banana socket for RS-485

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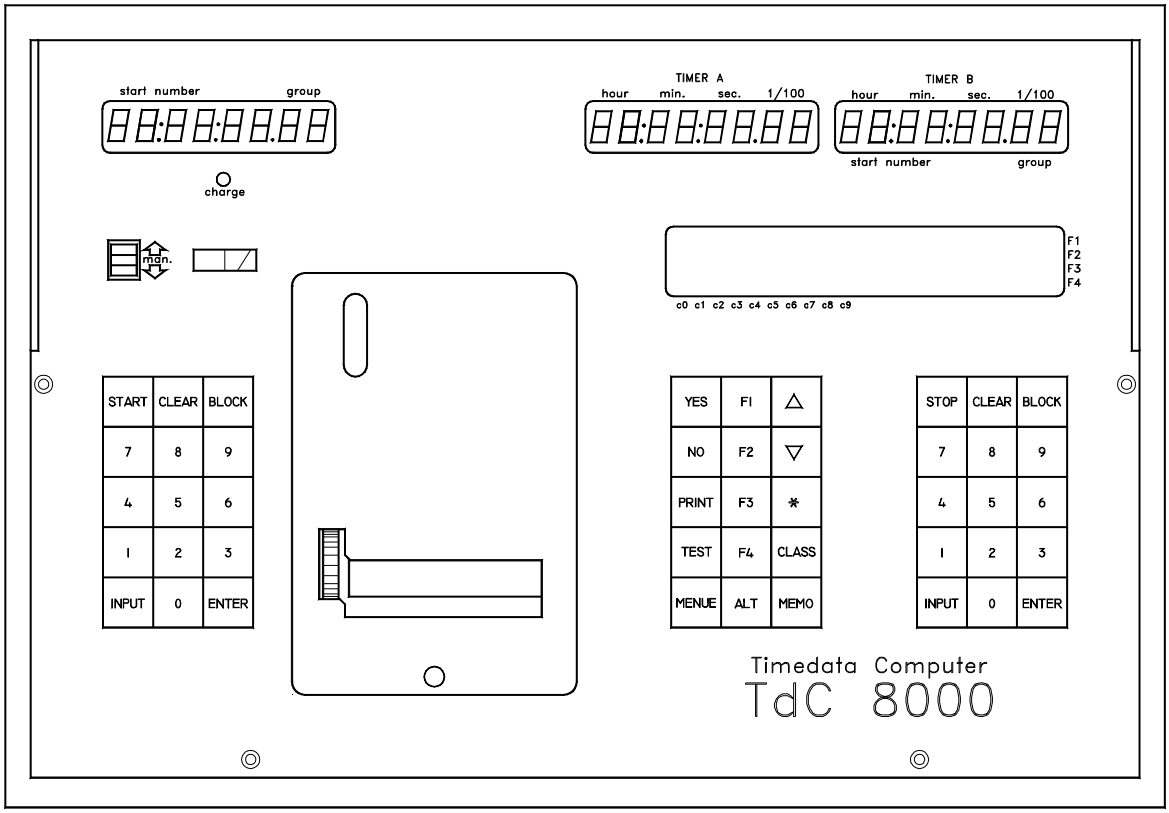
1. DEVICE DESCRIPTION

The TdC 8000 is the descendent of the popular TdC 4000 used for over 14 years worldwide. Compared to the TdC 4000 is has a bigger memory and the software is much more flexible. An additional alphanumeric display shows whatever is important for the operator.

It has a memory capacity of about 18.000 times for a maximum of four races. The most modern processor 80C166 guarantees to work effective and fast. The new RS 485 interface holds open many feature uses for the TdC 8000.

The separated keyboard makes it possible to work with two persons on the TdC 8000 at the same time (e.g. one for start, one for finish)



1.1. Standard Software:

Programm	Program Number	Page
Split	Program 1	63
Sequential	Program 2	in preparation
Split Sequ.	Program 3	66
Parallel Diff.	Program 4	70
Parallel Net	Program 5	74
Dual Timer	Program 6	80
Speed	Program 7	84
Speed Skiing	Program 8	88
TdC Test	Program 9	90

SPLIT: **Program 1**
Program for timing with intermediate time. You can adjust the precision. You can make up to 256 heats. You have a start-channel (c0), a finish-channel (c1), and up to eight intermediate-channels (c2 to c9)

SPLIT SEQUENTIAL (SPLIT SEQU.): **Program 3**
Program for timing with lap time and run time. You can adjust the precision. Previous to the race you must adjust the amount of laps. You can make up to 256 heats. You have a start-channel (c0), a finish-channel (c1), and up to eight intermediate-channels (c2 to c9)

PARALLEL SLALOM:

Parallel Diff: **Program 4**
It shows the difference time between the two competitors and the winning course.

Parallel Net: **Program 5**
It measures the net time of each course and the difference time between both competitors. It is also possible to get the total time in the second run for net- and difference time.

DUAL TIMER: **Program 6**
Net timing with intermediate time on two curses with a maximum of one competitor on each course. The start can be parallel or separate for both curses.

SPEED: **Program 7**
Program to measure the speed in either km/h, m/s or m.p.h.. You can adjust the measuring distance between 1 and 9999 m.

SPEED SKIING: **Program 8**
Program to measure the speed and time for speed skiing.

TdC-TEST: **Program 9**
Program to test the TdC 8000:

2. OPERATING

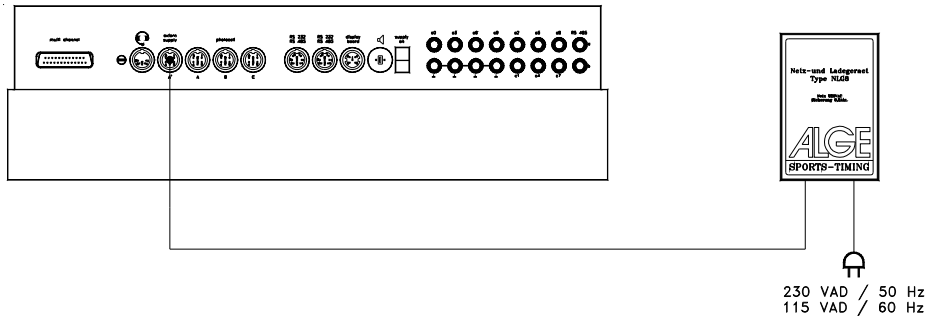
2.1. Power Supply:

The TdC 8000 has a built in rechargeable-NiCad-battery-pack (4.5 Ah).

Charge the NiCad-battery-pack with the NLG8 or a 12 Volt car-battery. The charging voltage must be between 11 and 16 Volts. To load the TdC 8000 you need to turn it on.

2.1.1. Net-Charging-Set NLG8:

With the net-charging-device NLG8 you can load the TdC 8000 direct form the mains:
- Plug NLG8 at the mains.
- Plug NLG8 at the socket „extern. supply“ (19) or „photocell (20, 21 or 22).
- Turn TdC 8000 on (switch 26).
- The read LED (3) must burn.



- o The TdC 8000 must be switched on during the charging process (internal charging electronic)
- o You can load the TdC 8000 also during the normal timing operation.
- o The charging process with the NLG8 need about 12 hours.
- o The no-load-voltage is about 15 VDC.
- o The charging voltage of the NLG8 is about 11.7 VDC

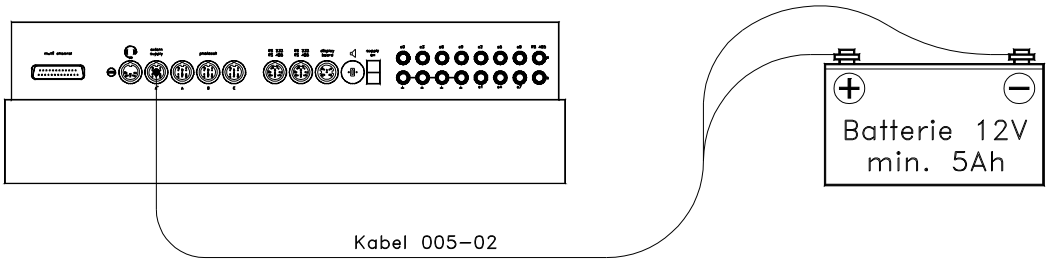
ALGE has two types of NLG8. One is with 230V/50Hz, the other with 115V/60 Hz. The voltage is printed on the NLG8 case. Please make sure that you use the NLG8 with the correct voltage for your mains.

Attention: You cannot load the TdC 8000 when switched off!

2.1.2. External Battery (12 V car battery):

You can use any 12 Volt battery with a capacity of 5 Ah to charge or supply the TdC 8000.

- Connect cable 005-02 at socket "extern supply" (19) of the TdC 8000.
- Connect clips that says (+) at the plus pole of the battery.
- Connect clips that says (-) at the minus pole of the battery.
- Red LED (3) of the TdC 8000 must burn.



2.1.3. Working Time:

The voltage is shown on the info-display (6) if you press <TEST>. Further it shows the battery condition always on the meter (4). As long as you have the needle of the meter in the green section you can operate the TdC 8000.

2.1.4. Condition of the Rechargeable-Battery:

The TdC 8000 has six NiCad rechargeable batteries each with 1.2 V and 4.5 Ah.
You can check the voltage by pressing <TEST>. It shows in the info-display the voltage.
The TdC 8000 measures always the voltage of the batteries and shows a message as soon as they get empty.

Early warning: The info-display (6) shows: "Almost empty battery!"
The voltage is 6,2 Volt
You can continue to work until the voltage is 5,8 Volt. If possible plug a NLG8 or 12 Volt battery to charge (supply) the TdC 8000.

Turn off: The info-display (6) shows: "Empty battery!"
The voltage is 5,8 Volt
If the voltage is 5.8 Volt it switches the TdC 8000 in a power down mode. This is necessary to save the memory. As soon as you supply the TdC 8000 with the NLG8 or a 12 Volt Battery you can continue to work. The machine is still synchronized.

2.2. Printer:

When you switch TdC 8000 on it activates the printer automatically. After you selected the program you can make the following adjustments for the printer:

Print-Mode: The printer prints all data. The printer is automatically in this mode, when you switch the TdC 8000 on.

Buffer-Mode: All data for the printer are stored in the buffer. This mode you use e.g. to change the paper.

- Printer is in Print-Mode
- Press <PRINT>
- Printer is now in the Buffer-Mode
- Press <PRINT>
- Printer is again in the printing mode. It prints now all data collected during the buffer mode.

Printer Off: The printer is off and all data for the printer are lost.

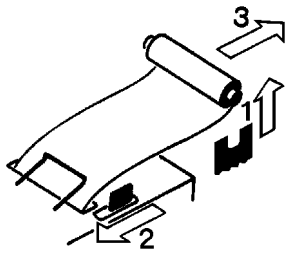
- Printer is in Print-Mode
- Press <ALT> and <PRINT> at the same time
- Printer is switched off
- Press <ALT> and <PRINT> at the same time
- Printer is in Print-Mode

o Paper Check

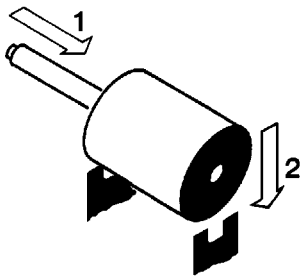
- Push cover release button (11).
- Remove the cover.
- Check the paper.

A black strip will become visible on the edge of paper, when the paper roll is about to run out.

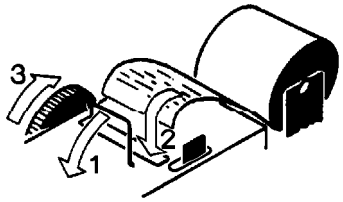
o Changing the Paper:



- Push cover release button (11) .
- Remove the cover.
- Remove the rest of the paper from the holder.
- Press the black lever forward and pull the paper out.



- Put the axle into the paper holder.
- Put the now roll on the paper holder.



- Insert the beginning of the paper into the paper feed of the printer. Make sure it is cleanly out.
- If necessary correct the paper path through pressing the black lever forward and adjusting the paper manually.
- Put the cover back and press the button until they stay in the lower position.

Attention: Please take care that the paper goes through the paper slotted hole of the cover when you put the cover back on.

Clearing Jammed Paper:

- Press the black lever forward and pull back the remaining paper.
- Remove the serrated cutter by holding the black lever forward and sliding the cutter towards the lever and lifting upwards.
- Pull the print head back with your fingernail and remove any stuck paper with tweezers or small needlenose pliers.
- If the paper has jammed under the roller it will be necessary to remove it by sliding a piece of 35 mm film through the paper path and rocking it to and fro until the stuck paper is expelled. Use a piece of film about 20 cm long to have something to hold onto.

The printer is a very rugged device but needs regular maintenance for a long service life. Call your ALGE agent if you have further questions.

Printer-Paper:

Electrosensitive paper 60 mm width, 40 mm diameter with about 25 m paper length (about 6000 lines). The electrosensitive paper is available at your ALGE representative.

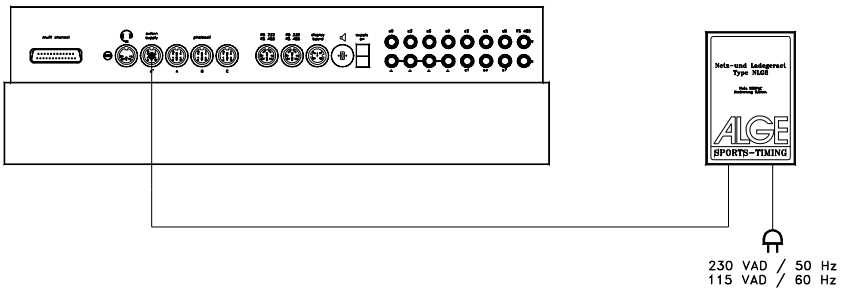
A black strip will become visible on the edge of paper, when a paper roll is about to run out.

Attention: Do not pull on the paper when printing. Press the black lever forward and pull the paper carefully out, if the paper is repressed.

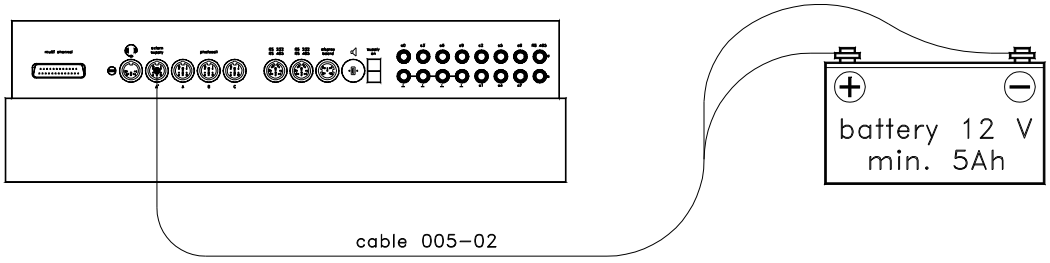
The printer-paper has to stay dry!

2.3. How to Connect other Devices with the TdC 8000:

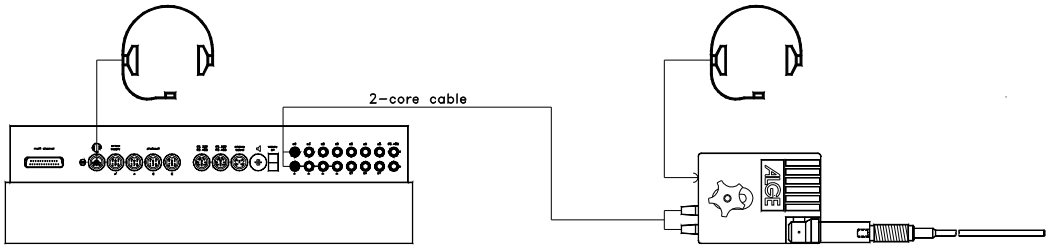
o Net-Charging-Set NLG8:



o External 12 Volt Battery:

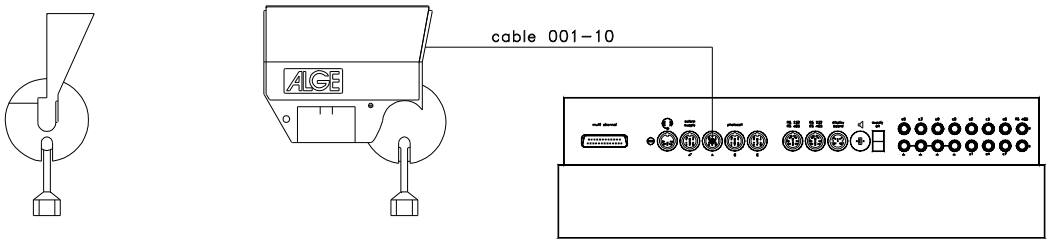


o Startgate STSc with a Headset:



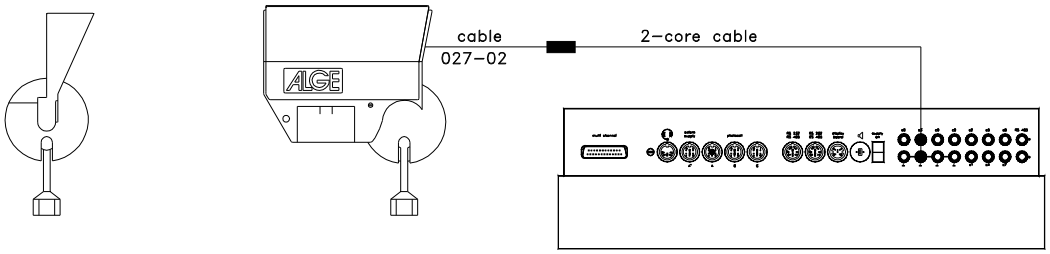
o Photocell RLS1c:

- **Finish Photocell:**
  If you have one photocell for the finish you must use socket (19). If you make a race with three different start and finish, use socket (19) for finish 1, socket (20) for finish 2 and socket (21) for finish 3.

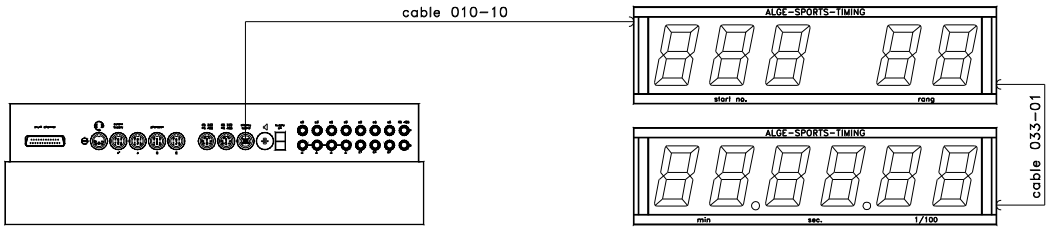


- **Intermediate time (supply from the TdC 8000):**
  The cable you have to use depends on the program you use. For program SPLIT you can use cable 003 (up to 100 m cable length).

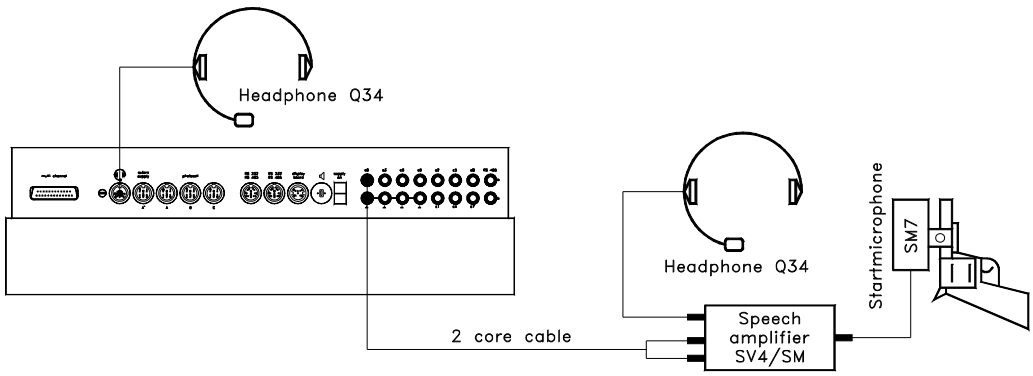
- **Intermediate time (2-wire cable):**
  For each timing channel you have a banana socket. If you connect a photocell with the banana socket you need a external supply for the photocell (battery into the photocell) Plug cable 027-02 at the photocell. From this cable you can go to the TdC 8000 with a 2-wire cable (e.g. cable real KT 500 or KT 300).



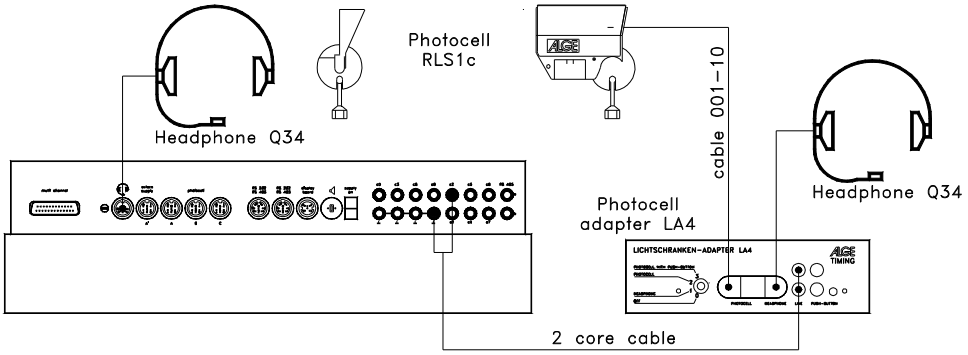
o Display Board GAZ4:
For distances over 10 Meter you can use any 2-wire cable with banana plugs (e.g. cable real KT 500 or KT 300).



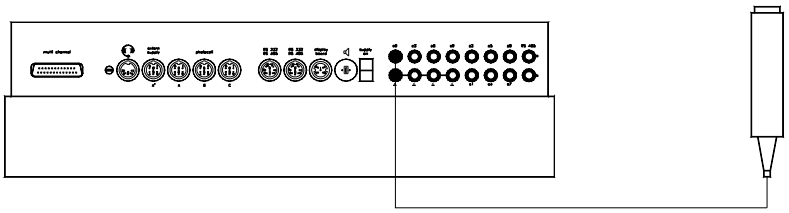
o Startmicrophone SM7 with Speech Amplifier SV4/SM:



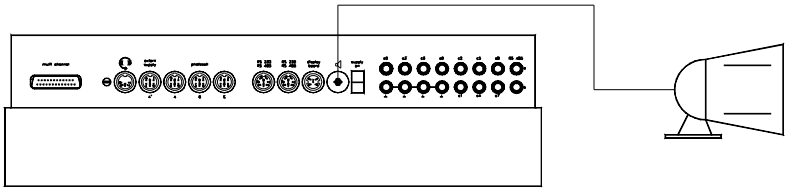
o Photocell Adaptor LA4:



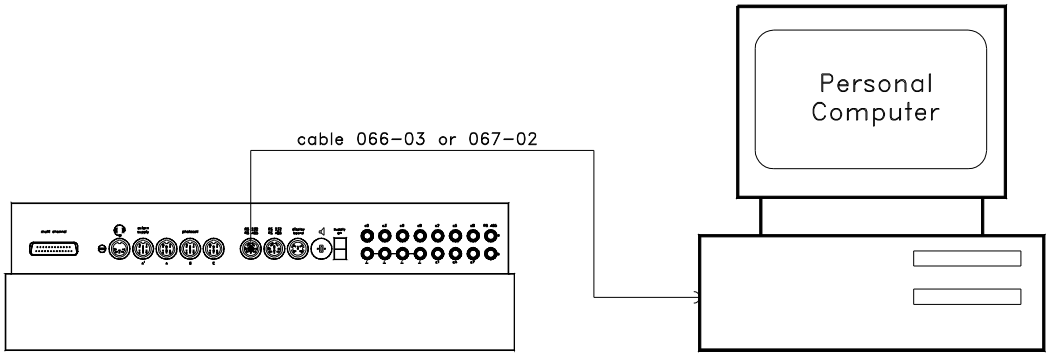
o Handswitch:



o Speaker DL:



o Personal Computer:



2.4. Memory:

The memory function in the TdC 8000 is designed to allow you to have up to four races with the same number range. Therefore you could have a race for man with start numbers form 1 to 100 and a race for women with the same start numbers. If you have a race with different start numbers for each category, the groups function should be used. Make sure that the organizing committee clearly lists the number range of the groups and how they should be run. The TdC 8000 is designed to allow the orderly transfer of time keeping from one race to another. It is not designed to allow the switching of races on the spur of the moment.

The TdC 8000 has memory which will store approximately 18,000 times. Per race you can store a maximum of 9,000 times. Together race 1 and 2 have a capacity to store 9,000 times as well as race 3 and 4. For instance, if you have stored 1000 times in race 1 already you have 8000 times available in race 2.

For each race a maximum of 256 heats (runs) can be stored. You can clear the memory each time you turn the TdC 8000 on, or if you change a race in the main menu.

For the actual heat the TdC 8000 always stores the start time (time of day), finish time (time of day), and run time, if you use the difference time mode. For the previous heat it always stores the memory time (total time from all previous heats).

Times stored in the first heat:

- start time (difference time)
- finish time (difference time)
- intermediate time (each intermediate time)
- run time

Times stored in the second (third, etc.) heat:

- memory time
- start time (difference time)
- finish time (difference time)
- intermediate time (each intermediate time)
- run time
- total time

2.4.1. Memory Organisation:

There is a limited amount of memory capacity for each race:

Race 1: about 8,600 times, if race 2 has no data stored
Race 2: about 8,600 times, if race 1 has no data stored
Race 3: about 8,600 times, if race 4 has no data stored
Race 4: about 8,600 times, if race 3 has no data stored

2.4.2. Clear Memory:

After turning the TdC 8000 on (switch 26) you have to select the program. Then you are asked if you want to clear the memory. The info-display (6) shows the following message:

Clear race:	8350/ 253 R1	F1
	0/ 253 R2	F2
	651/ 7009 R3	F3
Continue: ENTER	943/ 7009 R4	F4

You can clear each race individually with the <F> keys.

By pressing the <F> key you select the race that you want to clear. You can select different races at the same time. It clears the memory when you press the <ENTER> key of the finish keyboard (15).

E.g.: If you clear race 1 and 3 it shows the following figures on the info-display (6):

```
Clear race:                8350/  253 R1<  F1
                              0/  253 R2   F2
                            651/7009 R3<  F3
Continue: ENTER             943/7009 R4   F4
```

If you press <ENTER> without pressing an <F> key it will not clear the memory.

2.5. Select a Race:

After clearing the memory you have to select the race that you want to use. You can keep a maximum of four races at the same time in the memory. Each race is completely independent. This means that for each race you can use the same bib numbers from 1 to 9999 and you can make up to 256 heats.

```
Select race:               7012/ 1591 R1<  F1
                              0/ 1591 R2   F2
                            651/ 7009 R3   F3
Continue: ENTER             943/ 7009 R4   F4
```

Two numbers are shown for each race. The first number shows how much memory you have used, and the second how much memory you have available. For a cleared race it shows zero as first number.

When "select race" is displayed the cursor will be placed on the previous race. If you want to select that race again press <ENTER>.

If you want to select a different race you can select with key <F1>, <F2>, <F3>, or <F4>.

The race selected is always marked with an arrow.

Memory was not cleared:

If you select a race that is not cleared it will show the following message in the info-display (6):

```
Select Heat:                    SAME (1)<  F1
                                NEXT (2)   F2


Continue: ENTER
```

(1) means first heat
(2) means second heat

If you select the same heat, you can continue to work in that same heat as you worked before.
If you select the next heat, then a new heat is started.

If you select a new heat:

- All valid run times (or total times) will be stored as memory time
- All other times will be cleared (e.g. start-, finish- ,intermediate time)

2.6. Precision:

You have to select the degree of precision that you want for the run time, intermediate time, and total time. The Timer itself always uses 1/10,000 resolution, which is especially important if you use the difference timing mode.

Use the <F> key to select. The cursor will always be on the position used previously.

```
Select precision:                    1 s   F1
                                  1/10 s   F2
                                 1/100 s<  F3
                                1/1000 s   F4
```

2.7. Timing Modes:

We use two different timing modes: difference timing and absolute timing. You must select the timing mode before you start a race:

```
Select timing:                    ABSOLUTE   F1
                                DIFFERENCE<  F2

Continue: ENTER
```

select with <F1>
select with <F2>

Absolute:

Time starts form 0:00.00
The run time (and intermediate times) are stored for each competitor.
This mode should be used for races with mass start.

Advantage: For each competitor only one memory place during the first heat (if you have no intermediate times)

Disadvantage: If you do not have a mass start, it will be impossible to make time corrections.

Selection: Press <F1> and <ENTER>

Difference:

The time of day is stored for each start- and finish impulse. Therefore you have to input the time of day first. From the difference between finish time and start time it calculates the run time.
This mode should be used for single start and group start races.

Advantage: You can correct times.

Disadvantage: For each competitor at least three memory places are needed (start time, finish time, run time).

Selection: Press <F2 > and <ENTER>

2.8. Input of Groups:

You can input up to 99 groups. A group must consist out of competitors with continues start numbers. If you input groups it shows always the rank within the group, and you can make a group-start and group -classement.

```
Input groups?                          YES  F1
                                        NO< F2

Continue: ENTER
```

If you do not want to input a Group, then press <NO> or <F2> and <ENTER>.
If you want to input a Group, then press <YES> or <F1> and <ENTER>.

```
GROUPS:              Gr   1:     1 >     0

Save with: ENTER
```

Input the last start number of each group. The TdC selects automatically as first start number of the next group the next higher start number.

```
GROUPS:              Gr   1:     1 >    60
                     Gr   2:    61 >    90
                     Gr   3:    91 >   120
Save with: ENTER     Gr   4:   121 >     0
```

First group from StNo. 1 to 60
Second group from StNo. 61 to 90
Third group from StNo. 91 to 120
No input yet

Attention: You should always input the groups, that you have some empty start numbers in every group. This start numbers you can use in case of late entries.

2.9. Test-Function - Checking the TdC 8000:

When you press <TEST> the Info-Display (6) shows the following:

```
C0 =  4.9V  battery   =  7.3V
C3 =  4.9V  photocell =  4.9V
C6 =  4.9V  extender  =  0.00A
 # # # # # # # # # #
c0 c1 c2 c3 c4 c5 c6 c7 c8 c9
```

The Test-Function shows the condition of the device. The condition of all ten channels are monitored (line 4). If one channel blinks, it means that it has a short-circuit. For channel c0, c3 and c6 the voltage is shown.

In addition it shows the voltage of the NiCad battery, the photocell, and the current for the extender.

Channel c0, c3, and c6 should normally have about 5 V (open). When an impulse is reached the voltage must go down to 0 V.
When fully loaded the battery has about 7.4 V. The empty battery has a voltage of about 5.5 V. At this voltage the device switches off. A battery warning appears on the info-display (6) when the power is 6.2 V or lower.

The stabilized voltage "photocell" supplies the photocells and must be about 5 V.

The current for extender-devices must be less then 1 A (interface RS 485 (23)). If the current reaches 1 A it switches the supply for the extender off.

Line Test - Checking the Start and Finish Line:

Checking a 1 pair cable which is connected at banana socket c0, c3, or c6.

- Switch TdC 8000 on (switch 26)
- Select the program
- Make the program ready for timing
- press <TEST> (keep it pressed)
- The info-display (6) shows the TdC 8000 measurements
- Measurement of channel c0, c3 and c6 is important for the line test

o Short-Circuit-Test:
  - Cable is open on the start side
  - Press <TEST> (press key until you finish the test)
  - The voltage of the open channel (c0 , c3, or c6) must be about 4.9 Volt

o Resistance-Test:
  - Short circuit the pair on the start side (press banana plug together)
  - Press <TEST> (press key until you finish the test)
  - The voltage with shorted channel (c0, c3, or c6) must be between 0 and 0.9 Volt. If the voltage is higher than 0.9 V the resistance of the cable is too high (maximum 2000 Ω loop resistance).

The line test meter is only for quick reference. Please use a multitester set on Ohms for accurate testing of your wiring. Remember that resistance on the line will change due to weather conditions. Always check the condition of splices, especially in extremely cold temperatures. Scotchlocks and AMP locks have a bad habit of opening due to the expansion rate differences between the copper wire and the steel splicing plate. You should use the older "White Bean" connectors if there is a chance that temperatures will fall to below -10 F (-15°C).

Most of the problems with timing installations are due to wiring on the course. Please take the time to review your wiring early in the season. Bad splices and connections will only get worse as time goes on and they are a lot easier to deal with in the Fall before the pedestals get covered with snow.

Please call your ALGE agent for assistance with wiring. They are able to consult with you on proper wiring plans and are usually available to travel to your site for more detailed work at reasonable expense.

Needle of meter (3) swings:
The needle of the meter starts to swing as soon as the photocell is out of line. Please check the set up of the photocell. A swinging needle could also be coffed during a very long timing impulse or through a short-cut of the cable.

2.10. Synchronize Start:

Synchronization between TdC 8000 and other timing devices is possible. You synchronize the TdC 8000 after you adjust the time before you start the timing.

Connect other timers through banana socket of channel c0 of the TdC 8000 with a 1 pair cable (or cable 004 at socket 19 or 20).

```
Time: 10:15:23                          OK<
Date: 96-02-28                       WRONG

Continue: ENTER
```

F1 time on display is correct
F2 time on display is not correct

There are two ways to make the synchronization:
- Synchronization from the internal clock
- Manual synchronization

Synchronization from the internal clock:

- Press <F1>
- Press <ENTER>
- The info-display (6) shows:

```
Time: 10:15:45
Date: 96-02-28

Synchronize: on minute change
```

- At the next sharp minute the TdC 8000 gives the synchronise impulse through channel c0.
- At the synchronization it gives a beep form the TdC 8000.
- The time of day disappears in the info-display (6).
- The TdC 8000 is ready for timing.

Manual synchronization:

- Press <F2>
- Press <ENTER>
- The info-display (6) shows:

```
Time: 10:15:34
Date: 96-01-16

Save with: ENTER
```

- Input (correct) the time of day with the finish keyboard (15) and confirm with <ENTER>.
- Input (correct) the date with the finish keyboard (15) and confirm with <ENTER>.

```
Time: 10:16:00
Date: 96-03-28

Synchronize: START-key / channel C0
```

- Start the timers by pressing the <START> key or through an external impulse of channel c0.
- The TdC 8000 is ready for timing.

3. TIMING

3.1. Switching the TdC 8000 on:

3.1.1. First Heat:

- Turn TdC 8000 with switch (26) on.
- It shows you on the info-display the following:

```
                ALGE TIMING
                 TdC 8000

                ENG  V96.C2
```

company name
name of device
language and software version number

- After some seconds it shows the program that was used the last time

```
Program 1: SPLIT                  V 96.C2


Select: YES/NO or program number
```

program name and version number
possible selections

- Select the program with <YES> or <ENTER>. If you want another program, you can input direct the program number, or use <N0> or the cursor until you have the correct program on the screen.
- The info-display (6) shows the used memory (see point 2.4 on page 15):

```
Clear race:                1345/ 7258 R1  F1
                              0/ 7258 R2  F2
                           1250/ 6819 R3  F3
Continue: ENTER             534/ 6819 R4  F4
```

- It is possible to store four different races (R1, R2, R3 and R4). The info-display (6) shows how many memory is used (first number) and how many is free (second number)
- Press <F1>, <F2>, <F3> or <F4> to mark the races that you want to clear (it shows a arrow in the display at the end of the line).
- Press <ENTER> to clear the races.
- You have to select now the race:

```
Select race:                  0/ 8603 R1<  F1
                              0/ 8603 R2   F2
                           1250/ 6819 R3   F3
Continue: ENTER             534/ 6819 R4   F4
```

- Select race with<F1>, <F2>, <F3> or <F4> and confirm with <ENTER>
- If you select a cleared race you have to select the timing precision:

Select precision:	1 s	F1
	1/10 s	F2
	1/100 s<	F3
Continue: ENTER	1/1000 s	F4

Precision: seconds
Precision: 1/10 seconds
Precision: 1/100 seconds
Precision: 1/1000 seconds

- The precision is only for calculated times (run time, intermediate time, etc.), but not for the time of day.

- Select the precision with <F1>, <F2>, <F3> or <F4>. It will pre-select automatically the last precision that you used.

- Confirm the precision with <ENTER>.

- After the precision you have to select the timing mode:

Select timing:	ABSOLUTE	F1
	DIFFERENCE<	F2
Continue: ENTER		

Timing without time of day
Timing with time of day

- Select the timing mode with <F1> or <F2> (see point 2.7 on page 17).

- Confirm the timing mode with <ENTER>.

- After the timing mode you have to select the start mode:

Select start mode:	SINGLE START<	F1
	GROUP START	F2
	MASS START	F3
Continue: ENTER		

each competitor starts separate
within the group is a mass start
all competitors start together

- Select with <F1>, <F2> or <F3> the start mode (see point 3.3 on page 31).

- Confirm the start mode with <ENTER>

- After the start mode you have to select if you want to use groups:

Input groups?	YES	F1
	NO<	F2
Continue: ENTER		

- If you want to use groups (ranking within the group) press <YES> or <F1>.
  If you want no groups (ranking of all competitors) press <NO> or <F2>.

- If you input groups the info-display (6) shows the following:

GROUPS:	Gr	1:	1 >	50	
	Gr	2:	51 >	100	
	Gr	3:	101 >	230	
Save with: ENTER	Gr	4:	231 >	0	

Input always the last bib number of a group. If you want to input this tree groups, press for the fourth group two times <ENTER>.

- After the group selection you have to input the time of day:

```
Time: 10:15:23                    OK<
Date: 96-02-28                  WRONG

Continue: ENTER
```

F1 synchronization from internal clock
F2 input time of day

Confirm selection with <ENTER>

- You can input the time of day in two ways (see point 2.10 page 20):- internal clock
  - manual synchronization

  o Internal Clock:
  - Press <F1>
  - Press <ENTER>
  - wait for synchronise impulse (time of day runs in display 7)

  o Manual Synchronizing:
  - Press <F2>
  - Press <ENTER>
  - Input time of day with finish keyboard (15)
  - Confirm with <ENTER>
  - Input date with finish keyboard (15)
  - Confirm with <ENTER>
  - Make start impulse with <START>-key or through channel c0.

- TdC 8000 is ready

- The printer prints the following times (time of day mode / first heat):

```
0001 ST  10:07:04.640
     FT  10:08:35.150
     RT      1:30.50
```

3.1.2. Continue to Work in the First Heat after you Switch on:

- The process to switch the device on is as described for the first heat.
- Since you want to continue a race, it is not allowed to clear the memory.
- Select the correct race.
- The info-display (6) shows:

```
Select heat:                    SAME (1)
                                NEXT (2)<

Continue: ENTER
```

F1 The number stands for 1st heat
F2 The number stands for 2nd heat

- Press <F1> to select the same heat.
- Press <ENTER> to confirm the selection
- You have to synchronize the clock again or you take the internal time of the TdC 8000.
- The timer is ready.

3.1.3. Second Heat (Next Heat):

You can make up to 256 heats. For the heat(s) before it stores always a memory time (total time). There are two possibilities to get into the second heat:

- In the main menu you can change the heat (see page 58)
- Turn the TdC 8000 off and again on.

If you use the time of day it will print you the following results for each competitor:

```
0012 ST  10:07:04.640
     FT  10:08:35.150
     RT      1:30.50
     MT      1:32.38
     TT      3:02.88
```

Start time (time of day)
Finish time (time of day)
Run time
Memory time
Total time

Adjust in the main menu (menu 7), if you want the time started from zero, or from the total time of the previous heat (see page 53 - running time).

When a competitor finish it will show in the display (7) first either the run time, then the total time, or first the total time, then the run time, and again the total time. The display time you set in the main menu in point 4 and 5 (see page 52 - display time1 and 2). It shows each time for the duration of the display times.

Change Heat in Main Menu:

Advantage: You do not have to synchronize the device again. All adjustments stay as before.

Disadvantage: If you have a long break between the heats you have the device always running. This means, as longer as the race and the break, as more time difference you get between synchronized devices. If you have no external supply it will empty also the battery in the break between the heats.

How can you Change the Heat in the Main Menu:

- Press <ALT> and <MENU> at the same time.
- Select with cursor-key into menu 24 "CHANGE HEAT":

```
Menu 24: CHANGE HEAT


Select: YES/NO or menu number: 24
```

- Press <YES>

```
Select Heat::                  SAME (1)<
                               NEXT (2)


Continue: ENTER
```

F1 continue in same heat
F2 continue in the next heat

- With <F2> and then <ENTER> you select the next heat. The number in the brackets shows always the heat number (2 = second heat).

```
Start order:                START NUMBER< F1
                    BIBO WITHOUT GROUPS  F2
                       BIBO WITH GROUPS  F3
Continue: ENTER
```

- Select with <F1>, <F2> or <F3> the start mode and confirm it with <ENTER>:
  - *Start number:* The start order is after the bib numbers. With the switch (1) you can select it you want to count up, manual or down.
  - *Bibo without groups:* All competitors start after the BIBO rule. You have to input the amount of competitors that you want to reverse and confirm it with <ENTER>.
  - *Bibo with groups:* In each group the competitors start after the BIBO rule. You have to input the amount of competitors that you want to reverse for each group and confirm it with <ENTER>.

- The TdC 8000 is ready for the new heat.

Changing a Heat by Turning the TdC 8000 off:

Advantage: If you have a long break it does not use battery power if you switch it off. If you have the TdC 8000 synchronized with other devices it is exactly synchronized for the second heat again.

Disadvantage: You have to synchronize the TdC 8000 again for the new heat (with Startclock, backup timer, etc.)

You have to go through the same start procedure for the second heat as for the first heat.

If you change from one heat to the next heat you have to switch the TdC 8000 with switch (26) off and again on. Be careful that you do not clear the memory of the first heat.

- Switch the TdC 8000 with switch (26) on and select the program as in the previous heat.

- Do not clear the memory of the race.

- Select the correct race

- The info-display (6) shows:

```
Select Heat::                SAME (1)< F1   continue in same heat
                             NEXT (2)  F2   continue in the next heat

Continue: ENTER
```

- With <F2> and then <ENTER> you select the next heat. The number in the brackets shows always the heat number (2 = second heat).

```
Start order:                START NUMBER< F1
                    BIBO WITHOUT GROUPS  F2
                       BIBO WITH GROUPS  F3
Continue: ENTER
```

- Select with <F1>, <F2> or <F3> the start mode and confirm it with <ENTER>:
  - *Start number:* The start order is after the bib numbers. With the switch (1) you can select it you want to count up, manual or down.
  - *Bibo without groups:* All competitors start after the BIBO rule. You have to input the amount of competitors that you want to reverse and confirm it with <ENTER>.
  - *Bibo with groups:* In each group the competitors start after the BIBO rule. You have to input the amount of competitors that you want to reverse for each group and confirm it with <ENTER>.

- Synchronize of the TdC 8000:

```
Time: 10:15:23                          OK<  F1
Date: 96-02-28                       WRONG   F2

Continue: ENTER
```

- Synchronize TdC with other timing devices (see page 20, chapter 2.10)

- The TdC 8000 is ready for the new heat.

3.2. Keyboard Functions:

The keyboard of the TdC 8000 has three different blocks:
- Start-keyboard (9)
- Finish-keyboard (15)
- Function-keyboard (14)

Because of the separated keyboard blocks it is possible for two persons to work on the TdC 8000 at the same time. One person can manage the start, the other the finish (and intermediate times). The display (2) works always together with the start-keyboard (9). The display (7) and (8) works always with the finish-keyboard (15).

The function-keyboard (14) works together with the start-keyboard or finish-keyboard. It shows the informations on the info-display (6)

3.2.1. Start-Keyboard:

Manual start-impulse (SZM on printer, C0M on RS232), precision only 1/100

It clears the start time of the start number shown on display (2). (FALSE START)
If you press <ALT> and <CLEAR> together, it restores the cleared time again.

As long as you press <BLOCK> it will print all incoming start impulses (channel 0) as not valid. The time is marked on the first digit with a ?.
As long as you press <ALT> and <BLOCK> together, it ignores incoming start impulses (channel 0; see page 34)

to input the start number at the start. It shows the start number on the start-display (2).

To edit the start time of the start number in the start display (2).
If you press <MENU> and <INPUT> at the same time you get to start time input mode. You can input times individual or in intervals, etc.

Each start number that you input you must confirm with <ENTER>. Depending on the switch position of switch (1) the start number counts automatically up, down, or stays.

3.2.2. Finish-Keyboard:

Manual stop-impulse (ZZM on printer, C1M on RS232), precision only 1/100

It clears the finish time of the start number shown on display (2). (FALSE FINISH)
If you press <ALT> and <CLEAR> together, it restores the cleared time again.

As long as you press <BLOCK> it will print all incoming finish impulses (channel 1) as not valid. The time is marked on the first digit with a ?. The time does not stop.
As long as you press <ALT> and <BLOCK> together, it ignores incoming finish impulses (channel 1).

to input the start number at the finish (intermediate time). It shows the start number on the finish-display (8).

To edit the finish time of the start number in the finish display (8).
If you press <MENU> and <INPUT> at the same time you can change the run time, memory time or intermediate time.

Each start number that you input, you must confirm with <ENTER>.
Increment start number:
- up: press <ENTER>
- down: press <ALT> and <ENTER> together

3.2.3. Function-Keyboard (14):

To confirm a YES/NO question

If you do not confirm a YES/NO question

If you press <PRINT> it switches the printer into the buffer mode. This means that all information for the printer will be stored in the buffer. If you press again <PRINT> it will print all the data from the buffer. This function is manly to use when you change the paper.
If you press <ALT> and <PRINT> together it switches the printer off. All printer information is now lost. If you press <PRINT> or <ALT> and <PRINT> again it switches the printer on.
If you press <MENU> and <PRINT> together it prints all adjustments of the main menu.

To test the TdC 8000 (see chapter 2.9 on page 18).

Key has no function yet.

To print the Classement (see chapter 4.5 on page 44).

Cursor-key up

Cursor-key down

It goes always together with another key. You have to press first <ALT> and then the second key. Do not release <ALT> before you pressed the second key. <ALT> has a function together with <CLEAR>, <BLOCK> , <MENU>, and <PRINT>.

It goes always together with another key. You have to press first <MENU> and then the second key. Do not release <MENU> before you pressed the second key. <MENU> has a function with <ALT>, <INPUT>, <PRINT>, and <BLOCK>.

Function key 1: To select in a menu of the info-display (6) when the text is placed at the right side in line 1.

Function key 2: To select in a menu of the info-display (6) when the text is placed at the right side in line 2.

Function key 3: To select in a menu of the info-display (6) when the text is placed at the right side in line 3.

Function key 4: To select in a menu of the info-display (6) when the text is placed at the right side in line 4.

Memory for mass arrivals at the finish or intermediate time (see chapter 4.4 on page 42).

3.3. Start-Mode:

You can choose between tree different start-modes:

- **Single Start:** each competitor starts separate
- **Group Start:** all competitors within a group start together
- **Mass Start:** all competitors start together

With the switch (1) you control the start automatic for singles start and group start. This switch has three position. It shows the switch position on the start-display (2).

- *upper position:* after each start it changes the start number to the next free higher start number.
- *middle position:* manual mode, the start number stays until you change it with the keyboard.
- *lower position:* after each start it changes the start number to the next free lower start number.

3.3.1. Single Start:

Each competitor has a separate start time. In this mode you can select the output mode of the info-display (6) (see page 53 Menu 7: INFO-DISPLAY).

3.3.1.1. Start Mode for the First Heat:

If the start number increases e.g. from 1, to 2, to 3, to 4, etc. after each start you can use the automatic start mode (switch 2 in upper position).

Start number goes up automatically after each start

- Switch (1) in upper position (it shows the switch position in the start display 2).
- It shows 1 as start number in the start display (2).
- After the start of number 1 it increases the start number automatically to 2.
- After each further start it increases the start number again (automatically to the next start number that is not started yet).
- A manual correction of the start number is possible at any time (keyboard 9). If you press <ENTER> it increases the start number to the next start number that is not started yet.
- The display (2) shows for a start number with a start time a "u" in the display (u stands for used).

Start number goes down automatically after each start:

- Switch (1) in lower position (it shows the switch position in the start display 2).
- It shows 1 as start number in the start display (2).
- Input with keyboard (9) the start number that starts first (e.g. 48) and confirm it with <ENTER>.
- After the start of number 48 it decreases the start number automatically to 47.
- After each further start it decreases the start number again (automatically to the next lower start number that is not started yet).
- A manual correction of the start number is possible at any time (keyboard 9). If you press <ENTER> it increases the start number to the next start number that is not started yet.
- The display (2) shows for a start number with a start time a "u" in the display (stands for used).

Manual start input:

- Switch (1) in middle position (it shows the switch position in the start display 2).
- It shows 1 as start number in the start display (2).
- Input with keyboard (9) the start number that starts (e.g. 12) and confirm it with <ENTER>.
- After the start it shows a "u" in the display (2) . It stands for used and mans that this start number is already started.
- Input with keyboard (9) the next start number that starts (e.g. 25) and confirm it with <ENTER>.
- After the start it shows a "u" in the display (2) . It stands for used and mans that this start number is already started.

3.3.1.2. Start Mode for the Second Heat:

The start procedure for the third, fourth, etc. heat works like in the second heat. The switch (1) has the same function as in the first heat. If you use the BIBO mode for the second heat it is important that you have the upper position selected.

For the second heat you have the following text on the info-display (6):

```
Start order:            START NUMBER< F1
                 BIBO WITHOUT GROUPS  F2
                    BIBO WITH GROUPS  F3
Continue: ENTER                       F4
```

Select the start order with <F1>, <F2> or <F3>.

- **Start number:**

The start order works like for the first heat, depending on the switch position of switch (1).

- **Bibo with groups:**

The bibo rule is used in alpine skiing. Bibo does the following:
For races with two or more heats it takes the as start order the ranking of the first (previous) heat, except of the first places as start order for the 2nd heat. You have to input how man places you have to reverse. If you input e.g. 15 it does the following.

- rank 15 starts 1st
- rank 14 starts 2nd
- rank 13 starts 3rd
- etc..
- rank 1 starts 15th
- rank 16 starts 16th
- rank 17 starts 17th
- etc.

The TdC 8000 asks you how many competitors you have to invert. The TdC requests the FIS value of 15.

```
Invert:   15

Save with: ENTER
```

Amount of inverted competitors

Confirm your selection with <ENTER>

Attention: Switch (1) must be in the upper position!

- **Bibo with groups:** F3

  You have to input the amount of competitors to invert for each group. For the Bibo rule it takes the classement of the previous heat.

e.g.: You have a race with three groups:

```
INVERT:                    Gr  1:   15
                           Gr  2:   15
                           Gr  3:   15
Save with: ENTER
```

Input the amount of competitors that you want to invert and with <ENTER>.

Attention: "Bibo with groups" works only in the second heat if you worked in the first heat with groups. The switch (1) must be in the upper position!

3.3.2. Group Start:

Within a group they start with the same start time. If you use the group start, you should input groups. It is possible to input the groups during the switch on procedure or in the main menu (Menu 22: Groups; page 57).

If you do not input a group it will start all numbers (from 1 to 9999) with the first start impulse.

You can not use <CLEAR> of the start-keyboard (9) to clear a start time (it stores only one time for a group). To change the start time of a group, use <INPUT> of the start keyboard (9).

3.3.3. Mass Start:

All competitors from 1 to 9999 start with the same start time.

If you want to make a race with many competitors and a mass start, we recommend to use ABSOLUTE TIMING. This mode gives stores per competitor only the run time (if you have no intermediate time).

You can not use <CLEAR> of the start-keyboard (9) to clear a start time (it stores only one start time for all competitors). To change the start time of the competitor field, use <INPUT> of the start keyboard (9).

4. SPECIAL FUNCTIONS

4.1. TEST - Checking the TdC 8000:

see chapter 2.9 on page 18

4.2. BLOCK - Deactivate the Impulse-Channels:

You can deactivate each impulse channel (c0 to c9). There are two possibilities to deactivate the channels.

- The TdC 8000 ignores each impulse of a selected channel (channel off)
- The TdC 8000 marks each impulse of a selected channel (with ?) . The time does not start or stop on the display and display board.

Channel 0 (start) and 1 (finish) you can deactivate direct.

4.2.1. Blocking the Start:

- All start impulses (c0) are not valid and the time of day is marked with a ? as long as you press <BLOCK> of the start-keyboard (9).
  Printer: `?0043 ST  10:34:13.384`
  Display Board: no output
  RS 232: `?0043 C0  10:34:13.384(CR)`

- As long as you press <ALT> and <BLOCK> of the start-keyboard (9) together, the TdC 8000 will ignore all start impulses (channel 0). The TdC 8000 does not store or output this time.

If you block the start impulse it will not start the clock.

4.2.2. Blocking the finish:

- All finish impulses (c1) are not valid and the time of day is marked with a ? as long as you press <BLOCK> of the finish-keyboard (15). It does not stop the clock and it does not output a run time.
  Printer: `?0043 FT  10:34:13.384`
  Display Board: no output
  RS 232: `?0043 C1  10:34:13.384(CR)`

- As long as you press <ALT> and <BLOCK> of the finish-keyboard (15) together, the TdC 8000 will ignore all finish impulses (channel 1). The TdC 8000 does not store or output this time.

A stop impulse never stops the time on the display and display board as long as you press <BLOCK>.

4.2.3. Individual adjustment of the channels:

You can adjust each channel individual. When you turn the TdC 8000 on and clear the memory you have always all channels active.

- If you press <MENU> and <BLOCK> together it shows the setting of each channel in the info-display (6).
- Select the channel with ↓ and ↑ .
- Press <F1> to switch between activated and deactivated
- A (+) means, that the channel is activated.
- A (-) means, that the channel is deactivated.
- Leave the menu by pressing <MENU> and <BLOCK> together.

Info-display (6):

```
Channels on (+)/off (-):          CHANGE F1


+  +  +  +  +  +  +  +  +  +
c0 c1 c2 c3 c4 c5 c6 c7 c8 c9
```

The adjustment above comes automatically when you turn the device after you cleared the memory:

The example bellow shows that channel c3 and c4 is switched off:

```
Channels on (+)/off (-):          CHANGE F1


+  +  +  -  -  +  +  +  +  +
c0 c1 c2 c3 c4 c5 c6 c7 c8 c9
```

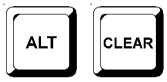
4.3. Editing of Times:

4.3.1. Editing of Start Times:

4.3.1.1. Clear Start Times:

- <CLEAR> of the start keyboard (9) clears the start time of the start number shown in the display (2).
- The cleared time is now marked with a c (c= cleared).
- The printer prints the time with the c prefix.
- The output of RS 232 interface looks like: c0043 C0 10:34:13.384

4.3.1.2. Restoring a Cleared Start Time:



- The correct start number must be shown in the start display (2). Then, press <ALT> and <CLEAR> on the start keyboard (9) together, it makes a valid time out of the cleared time.
- It stores the time as valid start time.
- The printer prints a valid start time.
- The RS 232 interface sends the valid start time.
- You can only restore the last start that was cleared.

Especially useful if a time is accidentally cleared.

4.3.1.3. Changing Start Times:

This function is used at any time to edit start times. If you press the <INPUT> of the start keyboard (9) it is possible to edit the start time. The following editing is possible:

- over write a start time with keyboard (9)
- copy the start time of a start number to another start number (if a racer loses their original number).
- identify the correct start time from many recorded impulses.

Input functions:

- Press <INPUT> of the start keyboard (9)
- The info-display (6) shows the valid start time of the start number you wish to edit.

```
Input:  0015 C0  13:15:35.486      NEW No F1
```

e.g. start number 15, the last digit of the start number blinks, you can confirm or over write the start number

- You can increment through the start list with the cursor keys (↓ and ↑) or over write the start number with the start keyboard (9).
- Confirm your choice with <ENTER>
- The cursor is now at the first digit of the time:

```
Input:  0015 C0  13:15:35.486      NEW No F1
       c0015 C0  13:10:12.498
       ?0015 C0  13:17:28.938
<BLOCK>)
```

valid time
time cleared with <CLEAR>
time not valid (e.g. from

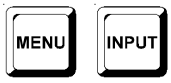
- You can select the correct time with the cursor key (↓ and ↑). When you press <ENTER> it

makes the selected time valid.
- You can also over write the valid time (first line) with the numbers of the start keyboard (9) (manual input of the start time).
- You can assign the selected time to another start number by pressing <F1> and input the new start number.
- Exit the input menu by pressing <INPUT> of the start keyboard (9) again.

Attention:
- If it shows 00:00:00.000 as start time it means, that you have no start time for this start number.
- If you make another start time valid, it stores the old start time with a c (clear).
  e.g.: `c 0009 ST 12:13.21.115`

Group start: If you work with group start, you can change the start time like for the single start. In the input menu it shows instead of the start number the group number. You can change only the start time of the complete group, but not from a single competitor.

4.3.1.4. Input Start Times (Start Intervals):



Use this function to enter regular interval starts or group mass starts. The concept is that you will be a timing at the finish line, and that all starts will be manually input.

- Press <MENU> and <INPUT> together
- The info-display (6) shows the following:

```
Start interval from No: 0001 to No: 0002
            start time: 00:00:00.000
              interval: 00:00:00.000
Save with: ENTER
```

- Input the first and last start number of that category.
- Input the start time of the first start number
- Input the interval time (time between two starts). If you input 00:00:00.000 as interval time it means a mass start for the start numbers that you have input.

Attention:
- If you input the start times before the start and there is a start delay, it is necessary to input the start times again.
- If you input the same start numbers for different groups it takes always the last input as valid.

e.g.: Input start number 1 to 10, start time is 10 o clock, interval time is one minute.

```
Start interval from No: 0001 to No: 0010
            start time: 10:00:00.000
              interval: 00:01:00.000
Continue with: ENTER
```

This input gives the following starting times:

start number 1	at 10:00
start number 2	at 10:01
start number 3	at 10:02
etc...	
start number 9	at 10:08
start number 10	at 10:09

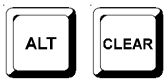
Attention:
Use the <INPUT> key of the start keyboard (9) to input the start times, if you do not have regular intervals between the competitors (e.g. Nordic combination - Gunderson start).

4.3.2. Editing of Finish Times:

4.3.2.1. Clear Finish Times:

- <CLEAR> of the finish keyboard (15) clears the finish time of the start number shown in display (8).
- The run time gets replaced by the running time in the finish display (7).
- The cleared time is now marked with a c (c= cleared).
- The printer prints the time with a c prefix.
- The output of RS 232 interface looks like: c0043 C1 10:35:33.854

4.3.1.2. Restoring a Cleared Finish Time:



- The correct start number must be shown in the finish display (8). Then, press <ALT> and <CLEAR> on the finish keyboard (15) together, it makes a valid time out of the cleared time.
- The finish display (7) resumes the running time.
- It stores the time as valid finish time.
- The printer prints a valid finish time.
- The RS 232 interface sends the valid finish time.
- You can only restore the last finish that was cleared.

Especially useful if a time is accidentally cleared.

4.3.2.3. Changing Finish Times:

This function is used at any time to edit finish times. If you press the <INPUT> of the finish keyboard (15) it is possible to edit the finish time of the start number shown on the finish display (8). The following editing is possible:

- over write a finish time with keyboard (15)
- copy the finish time of a start number to another start number (if you fail to identify the racer correctly when he cross the line).
- identify the correct finish time from many recorded impulses.
- Disqualification of a competitor (start number)

Input functions:

- Press <INPUT> of the finish keyboard (15)
- The info-display (6) shows the valid finish time of the start number you wish to edit.

```
Input:  0015 C1  13:15:35.486     NEW No F1
                                  DISQU. F2
```

e.g. start number 15, the last digit of the start number blinks, you can over write the start number or change it with the cursor keys (↓ and ↑)

- You can increment through the finish list with the cursor keys (↓ and ↑) or input the start number with the finish keyboard (15).
- Confirm the start number with <ENTER>
- The cursor is now on the first digit of the time:

```
Input:  0015 C1  13:15:35.486     NEW No F1
       c0015 C1  13:10:12.498     DISQU. F2
       ?0015 C1  13:17:28.938
```

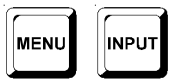
valid finish time
time cleared with <CLEAR>
time not valid (e.g. from <BLOCK>

- You can select the correct finish time with the cursor key (↓ and ↑). When you press <ENTER> it makes the selected time valid.

- You can also over write the valid finish time (first line) with the numbers of the finish keyboard (15) (manual input of the finish time).
- If you want to give the selected time to another start number press <F1> and input the new start number.
- To disqualify the competitor (start number) press <F2>. The disqualified time is marked with a d. For a disqualification it clears the start time, finish time, and run time.
- Exit the input menu by pressing <INPUT> of the finish keyboard (15) again.

Attention:
- If it shows 00:00:00.000 as finish time, it means that you have no finish time for this start number.
- If you make another finish time valid, it stores the old finish time with a c (clear).
  E.g.: `c 0009 FT 12:15.22.157`

4.3.2.4. Editing Run times, Memory Times, and Intermediate Times:



If you press <MENU> and <INPUT> of the finish keyboard (15) together you get into the menu to edit run times, memory times, and intermediate times.

- Press <MENU> and <INPUT> at the same time.
- The info-display (6) shows the following:

`Input times: RUN TIME<`	F1	<F1> to change the run time
`MEMORY TIME`	F2	<F2> to change the memory time
`INTERMEDIATE TIME`	F3	<F3> to change the intermediate time
`Continue: ENTER`		

- Select the time you want to change with <F1>, <F2> or <F3> or ↓ and ↑.
- Changes are made like described in following three chapters.
- Exit the menu by pressing <MENU> and <INPUT> together.

4.3.2.4.1. Editing a Run time:

You can edit the following:
- over write a run time with keyboard (15)
- copy the run time of a start number to another start number.
- Disqualification of a competitor (start number)

Changing a run time:
- Press <MENU> and <INPUT> together
- Press <F1>
- Press <ENTER>
- The info-display (6) shows the valid run time of the start number shown in the finish display (8):

`Input: 0015 RT 00:01:35.139 NEW No`	F1	e.g. start number 15
`DISQU.`	F2	

- You can change the start number with the cursor keys (↓ and ↑) or input the start number with the finish keyboard (15).
- Confirm the start number with <ENTER>

- The cursor is now on the first digit of the time:

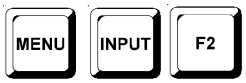
```
Input:  0015 C1  00:01:35.486      NEW No  F1
                                   DISQU.  F2
```

valid finish time that you can over write

- You can over write the valid run time with the numbers of the finish keyboard (15) (manual input of the run time).
- If you want to copy the selected time to another start number press <F1> and assign it.
- To disqualify the competitor press <F2>. The disqualified time is marked with a d. For a disqualification it clears the start time, finish time, and run time.
- Exit by pressing <MENU> and <INPUT> of the finish keyboard (15) together.

Attention:
- If it shows 00:00:00.000 as run time, it means that you have no run time for this start number.
- If you make another run time valid, it stores the old run time with a c (clear).
  e.g.: `c 0009 RT 00:01:35.486`

4.3.2.4.2. Editing a Memory Time:



You can edit the following:
- over write a memory time with keyboard (15)
- you can copy the memory time to another start number.
- disqualification of a competitor (start number)

Changing a memory time:
- Press <MENU> and <INPUT> together
- Press <F2>
- Press <ENTER>
- The info-display (6) shows the valid memory time of the start number shown in the finish display (8):

```
Input:  0015 MT  00:01:35.139      NEW No  F1
                                   DISQU.  F2
```

e.g. start number 15

- You can change the start number with the cursor keys (↓ and ↑) or input the start number with the finish keyboard (15).
- Confirm the start number with <ENTER>
- The cursor is now on the first digit of the time:

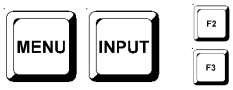
```
Input:  0015 C1  00:01:32.446      NEW No  F1
                                   DISQU.  F2
```

valid finish time that you can over write

- You can over write the valid memory time with the finish keyboard (15) (manual input of the finish time).
- If you want to copy the selected time to another start number press <F1> and assign it.
- To disqualify the competitor press <F2>. The disqualified time is marked with the prefix d. For a disqualification it clears the start time, finish time, and run time.
- Exit the menu by pressing <MENU> and <INPUT> of the finish keyboard (15) together.

Attention: - If it shows 00:00:00.000 as memory time, it means that you have no memory time for this start number.
- If you make another memory time valid, it stores the old memory time with a c (clear).
E.g.: `c 0009 MT 00:01:32.446`

4.3.2.4.3. Changing a Intermediate Time:



You can edit the following:
- over write a memory time with keyboard (15)
- you can copy the memory time to another start number.

Changing a intermediate time:
- Press <MENU> and <INPUT> (finish keyboard 15) together
- Press <F2> (1st heat) or <F3> (2nd heat)
- Press <ENTER>
- Input the channel number that you want to edit:

```
Input channel number: #


Save with: ENTER
```

e.g. channel 2

- Input the channel number with the finish keyboard (15). Input from 2 to 9 is possible.
- Confirm with <ENTER>.
- The info-display (6) shows the intermediate time of the start number shown in the display (8):

```
Input:  0015 C2  00:00:34.557     NEW No F1
                                  CLEAR  F2
```

e.g. start number 15
to clear the intermediate time

- You can change the start number with the cursor keys (↓ and ↑) or input the start number with the finish keyboard (15).
- Confirm the start number with <ENTER> (finish keyboard 15).
- The cursor is now on the first digit of the time:

```
Input:  0015 C1  00:00:34.557     NEW No F1
                                  CLEAR  F2
```

valid intermediate time that you can over write

- You can over write the valid intermediate time with the finish keyboard (15) (manual input).
- If you want to copy the selected time to another start number press <F1> and assign it.
- Exit the menu by pressing <MENU> and <INPUT> of the finish keyboard (15) together.

Attention: - If it shows 00:00:00.000 as memory time, it means that you have no memory time for this start number.
- If you make another intermediate time valid, it stores the old intermediate time with a c (clear).
E.g.: `c0009 C2 00:01:32.446`

4.4. MEMO - Time Buffer for Mass-Finish-Arrivals:

This function allows you to record and identify groups of racers that come to the line at the same time. You can enter and exit the MEMO-function at any time without danger of losing any time.

If two or more competitors reach the finish at the same time, it is usually not possible to input the start number as fast as the finish impulses arrive. In this case we use <MEMO>. After the arrival of the racer group you can input their start numbers, which will then create a valid run time for each.

- Group of competitors arrives at the finish.
- Press <MEMO>
- Write the start numbers of the group in order on paper or use a tape recorder.
- All times are stored in chronological order with a continuous ID-number.
- The printer prints every time marked with the prefix m.

RS 232 output: `m####xCCCxHH:MM:SS.zhtqxGR(CR)`
Printer output: `m####xCCCxHH:MM:SS.zht`
m ..... identification a memory time
..... every memo time gets continuous ID-number
CCC ..... timing channel (e.g. C1 for finish time, C1M for manual finish time)
HH:MM:SS.zhtq ... time with 1/10.000 seconds
HH:MM:SS.zht ..... time with 1/1000 seconds
GR ..... group
x ..... blank
(CR) ..... carriage return

Assign the correct start number to the times in memory:

As soon as the first competitor goes through the finish you can input the start number and confirm it with <ENTER> of the finish keyboard (8). The channel ID is shown for each time and identifies the score of the impulse. Remember that C1 is the finish channel.

- The info-display (6) shows the following:

```
Memory:     1   C1   13:05:11.3451 No:     _
            2   C1   13:05:12.3892
            3   C2   13:05:15.9848
4           4   C1   13:05:15.4566
```

first time in memory, channel 1
second time in memory, channel 1
third time in memory, channel 2
fourth time in memory, channel 1

- The four in the lower left corner shows that you have four times stored in the memory.
- The cursor is in the upper right corner, ready to input the start number
- Input the start number (finish keyboard 15), e.g. start number 34
- Confirm the start number with <ENTER>
- The time and start number disappears and each line moves up.

```
Memory:     2   C1   13:05:12.3892 No:     _
            3   C2   13:05:15.9848
            4   C1   13:05:15.4566
3
```

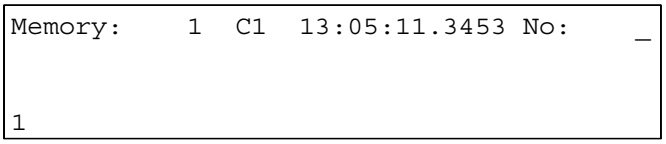
second time in memory, channel 1
third time in memory, channel 2
fourth time in memory, channel 1

- Input the start number (finish keyboard 15), e.g. start number 12
- Confirm the start number with <ENTER>
- The time and start number disappears and each line moves up.

- With ↓ and ↑ it is possible to move the times up and down.
- Input all start number as before.
- Press <MEMO> to exit the MEMO-menu

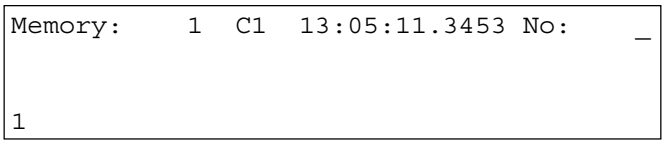
Assigning the same time to two or more competitors:

You can assign the same time to two or more competitors, if you only receive one impulse from a sensor.



Only one time for two competitors

- Input the first start number with finish keyboard (15), e.g. start number 55
- Confirm the start number with <INPUT>
- It stores and prints the time and the start number
- The same time is still on the info-display (6)



The same time is in the display

- Input the start number with the finish keyboard (15), e.g. start number 10
- Confirm the start number with <INPUT> if you have more numbers to assign, or <ENTER> for the final entry.
- The time and start number disappears, the Memo-memory is empty.
- Press <MEMO> to exit the MEMO-menu

Attention:
- You can delete a false time in the memo-mode by pressing <CLEAR> on the finish keyboard (15).
- You can enter and exit the MEMO-function at any time without danger of losing any time.

Each Memo-Time is shown with a continues ID-number. This number can help you to find the time again later.

If you clear a time in the MEMO mode with <CLEAR>, you can find it again when pressing <INPUT> and enter start number zero.

Memo-times cleared with <CLEAR> are marked with a capital C.
Run-times cleared with <CLEAR> are marked with a small c.

4.5. CLASS - Classement

4.5.1. Classement in Heat 1:

If you press <CLASS> it is possible to print a classement of the race.

You can print the Classement with race points (for skiing).

Each classement has an output on the printer, on the RS 232 interface and on the "display-board" interface (on channel 2).

A classement for the first heat prints the following:

1.	first rank
0003 RT 0:49.52	start number 3 and run time
2.	second rank
0011. RT 0:49.69	start number 11 and run time
3.	third rank
0008 RT 0:50.02	start number 8 and run time

The classement for the second heat prints the following:

1.	first rank
0011 RT 0:50.12	start number 11 and run time
MT 0:49.69	memory time
TT 1:39.81	total time
2.	second Rank
0003. RT 0:50.69	start number 3 and run time
MT 0:49.52	memory time
TT 1:40.21	total time
3.	3. Rang
0008 RT 0:50.72	start number 8 and run time
MT 0:50.02	memory time
TT 1:40.74	total time

If you press <CLASS> it shows on the info-display (6):

Classement: ALL <	F1
GROUPS	F2
CLASSES	F3
Continue: ENTER SINGLE	F4

- If you press six times ↓ the info-display (6) shows the following:

Classement: SINGLE	F1
LEADING TEN	F2
NOT FINISHED	F3
Continue: ENTER ADD<	F4

- If you press three times ↓ the info-display (6) shows the following:

```
Classement:                          ADD<  F1
                                DISQUALIFIED  F2
                                 START ORDER  F3
Continue: ENTER                     PROTOCOL  F4
```

- You can choose between ten different classifications
- Select with ↓ and ↑ or <F1>, <F2, <F3>, <F4>
- If you have selected the classement press <ENTER>
- You can select, if you want to make a classement of the run times, or intermediate times.

```
Classement:                          RUN TIME<  F1
                           INTERMEDIATE TIME    F2

Continue: ENTER
```

- If you press <F1> it prints a result list of the run times.
- If you press <F2> it prints a result list of the intermediate times.
- You can choose, if you want to calculate race points (for Alpine-Ski or Nordic-Ski):

```
Classement:                  NO RACE POINTS<  F1
                       RACE POINT BEST TIME    F2
                    RACE POINT START NUMBER    F3
Continue: ENTER
```

- If you press <F1> and <ENTER> it calculates no race points
- If you press <F2> and <ENTER> it calculates race points related to the best time
- If you press <F3> and <ENTER> it calculates race points related to the start number that you input.

- **All:** It prints the actual result list of all finished competitors, this means each who has a valid run time.

- **Groups:** For a group classement need to work with groups. Groups you have to input before the race starts or later in the main menu (see page 57). If you select groups, than you have to select if you want to print all groups (<F1>) or a single group (<F2>).

```
Classement:                             ALL<  F1
                                      SINGLE  F2

Continue: ENTER
```

ALL: Classement of each group

SINGLE: Classement of a selected group. Input the group number and confirm it with <ENTER>. When you have selected the last group press twice <ENTER>.

```
Classement:                          Gr:  0

Select: ENTER
```

- **Classes:** If you use "Classes" to make the ranking, it offers you a wide variety to make different ranking lists. You can create you own classes, independent from the groups that you have input. You can make e.g. a classement including some groups, or you can make a classement within a group. It is also possible to add late entries to a group, that have start numbers which are not within the group range.
  You must make all input for Classes with the finish keyboard (15).

```
Classement:                 No:    0>    0


Save with: ENTER
```

  Input always the first and last start number of a class and confirm with <ENTER>. It is also possible to add different start number section together to a classes classement:

```
Classement:                 No:    4>   10
                            No:   21>   25
                            No:   51>   55
Save with: ENTER
```

  If you want to execute the classement of the numbers that you input, press two times <ENTER>.

  The classement of the above example would include the following start numbers: 4, 5, 6, 7, 8, 9, 10, 21, 22, 23, 24, 25, 51, 52, 53, 54, 55

- **Single:** A classement of individual single start numbers is possible. This is e.g. necessary to make a classement within a team.

```
Classement:                       No:    _


Continue: ENTER
```

  - Input all start numbers that you want in the classement.
    E.g. 12 <ENTER>, 24 <ENTER>, 134 <ENTER>, 53 <ENTER>
  - The info-display (6) shows the following:

```
Classement:                       No:   12
                                  No:   24
                                  No:  134
Continue: ENTER                   No:   53
```

  - Press <ENTER> again after you have input all start numbers.
  - Select if you want to calculate race points.
  - It prints the classement (e.g. form start number 12, 24, 53, and 134).
  - Output of the same classement through the RS 232 interface.

- **First Ten:** It prints a classement with the fastest competitors within the race.

```
CLASSEMENT:

   RUN TIME
      LEADING TEN

    1.
 0009 RT      1:30.45
    2.
 0014 RT      1:30.56
    3.
 0008 RT      1:30.71

etc..

    9.
 0002 RT      1:31.69
   10.
 0020 RT      1:31.99
```

- **Not Finished:** It prints all start numbers that have a start time, but no finish time (run time).

```
CLASSEMENT:

   RUN TIME
      NOT FINISHED

 0004
 0028
 0052
 0109
```

- **Add:** A addition of times of different start numbers is possible. The add time is necessary e.g. to make a team classement.

```
Classement:                        No:    _


Continue: ENTER
```

- Input start numbers that you want to add.
  E.g.: 9 <ENTER>, 14 <ENTER>, 72<ENTER>, 102<ENTER>
- The info-display (6) shows:

```
Classement:                        No:     9
                                   No:    14
                                   No:    72
Continue: ENTER                    No:   102
```

- After you have input all start numbers, press <ENTER> again.
- It prints the times of start number 9, 14, 72, and 102.
- It prints the added time of these competitors.

```
CLASSEMENT:

   RUN TIME
      ADD

 0009 RT      1:31.45
 0014 RT      1:30.09
 0072 RT      1:33.41
 0102 RT      1:35.69
      ADD     6:10.64
```

- **DISQUALIFIED:** It prints all start numbers that were disqualified (with <INPUT> of finish keyboard)

```
Classement:

      DISQUALIFIED

 0007
 0024
 0107
```

- **Start Order:** If you make the second (or higher) head, it is possible to print the start order for the heat. This function is very nice if you start after the bibo rule in the second run.

- **Protocol:** A protocol is always printed in the memory order. You can print a protocol of the following times:
  - start time
  - finish time
  - intermediate time
  - run time

  Select with the cursor (< or >) or the F-key the times that you want to print:

```
Classement:                  START TIME< F1
                             FINISH TIME  F2
                       INTERMEDIATE TIME  F3
Continue: ENTER                RUN TIME  F4
```

  You can select to print all data from the selected time with <F1>, or only the selected data from the selected time with <F2>.

```
Classement:                          ALL< F1
                                   SINGLE  F2

Continue: ENTER
```

  If you select SINGLE, it is necessary to input the start numbers that you want to print (from - to). You can input also more than one start number blocks. Confirm the input by pressing twice <ENTER>.

```
Classement:                No:     0>     0


Continue: ENTER
```

4.5.2. Classement in Heat 2:

If you make a classement for the second (or higher) heat you can choose between the following classements:

```
Classement:                    TOTAL TIME<  F1
                                 RUN TIME   F2
                              MEMORY TIME   F3
Continue: ENTER          INTERMEDIATE TIME   F4
```

- **Total Time:** It prints a classement sorted by the total time.
- **Run Time:** It prints a classement to the actual run times (e.g. second run).
- **Memory Time:** It prints a classement of the previous heat(s) (e.g. first heat).
- **Intermediate Time:** It prints a classement of the actual intermediate times (you must select the intermediate time channel).

Select with <F1>, <F2>, <F3>, or <F4>.

4.5.3. Race Points:

If you make a classement for SPLIT it is possible to calculate the race points for Alpine Skiing or Nordic Skiing. You can calculate race points only if the race time is over 30 seconds.

```
Classement:                NO RACE POINTS<  F1
                    RACE POINT BEST TIME     F2
                 RACE POINT START NUMBER     F3
Continue: ENTER
```

- Press <F2> to calculate the race points related to the best time.
- Press <F3> to calculate the race points related to a certain start number.

```
Classement:                          No:    0
Save with: ENTER
```

If you want to calculate the race points for Groups or classes, it is necessary to input first the related fastest time.

- Input the F-value for the race. Each FIS race has a F-value. The Technical Delegated must know this value.

```
Classement:                 F-Value:      _
Continue: ENTER
```

Example of a classement with race point calculation:

```
   1.
0003  RT      1:49.52
 RP   00000.00
   2.
0011. RT      1:49.69
 RP   00012.34
   3.
0017. RT      1:50.69
 RP   00032.34
```

first rank
start number 3 and run time
race points for start number 3
second rank
start number 11 and run time
race points for start number 11
third rank
start number 17 and run time
race points for start number 17

4.6. PRINT - Switching the Printer off or on:

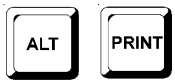
When you switch TdC 8000 on it activates the printer automatically. After you selected the program you can make the following adjustments for the printer:

Print-Mode: The printer prints all data. The printer is automatically in this mode, when you switch the TdC 8000 on.

Buffer-Mode: All data for the printer are stored in the buffer. This mode you use e.g. to change the paper.

- Printer is in Print-Mode
- Press <PRINT>
- Printer is now in the Buffer-Mode
- Press <PRINT>
- Printer is again in the printing mode. It prints now all data collected during the buffer mode.

Printer Off: The printer is off and all data for the printer are lost.



- Printer is in Print-Mode
- Press <ALT> and <PRINT> at the same time
- Printer is switched off
- Press <ALT> and <PRINT> at the same time
- Printer is in Print-Mode

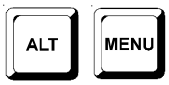
5. MAIN MENU - GENERAL ADJUSTMENTS

The TdC 8000 is a very universal timing device. To cover a wide range of timing solutions it is possible to adjust each program individual.

If you make changes in the main menu it stores this new values after you turn the machine off.

If you want the have the ALGE standard configuration do the following:
- turn TdC 8000 off (switch 26)
- press <ALT> and <MENU> together and keep it pressed
- turn TdC 8000 on (switch 26)
- release <ALT> and <MENU> after five seconds
- the main menu has now the ALGE standard configuration

You can also check and change the main menu set up through the RS 232 interface (see page 97, chapter 8.2.1 and page 98, chapter 8.2.2).

How do you get into the main menu: 

- Select program
- press <ALT> and <MENU> together
- Press ↓ and ↑ to go through the menu. With the numeric keys of the finish keyboard (15) you can select a menu direct.
- Select the chosen menu with <YES>

Mean Menu - Short Description:

Menu 1:	Delay Time Start = 1.00 s	Adjustable: from 0.01 to 9.99 seconds
Menu 2:	Delay Time Finish = 0.30 s	Adjustable: from 0.01 to 9.99 seconds
Menu 3:	Seconds Mode = OFF	Adjustable: ON or OFF
Menu 4:	Display Time 1 = 03 s	Adjustable: from 0 to 99 seconds
Menu 5:	Display Time 2 = 03 s	Adjustable: from 0 to 99 seconds
Menu 6:	Display Thousandth = OFF	Adjustable: ON or OFF
Menu 7:	Info-Display = START	Adjustable: START, FINISH, or OFF
Menu 8:	Running Time = RUN	Adjustable: RUN or TOTAL
Menu 9:	Running Tenth = OFF	Adjustable: ON or OFF
Menu 10:	Intermediate Rank = ON	Adjustable: ON or OFF
Menu 11:	Finish Rank = ON	Adjustable: ON or OFF
Menu 12:	STNO Automatic = OFF	Adjustable: START, FINISH, or OFF
Menu 13:	Print Start Time = OFF	Adjustable: ON or OFF
Menu 14:	Print Menus = ON	Adjustable: ON or OFF
Menu 15:	Print Linefeed = 0	Adjustable from 0 to 9
Menu 16:	RS-232 Baudrate = 9600 Bd	Adjustable 2400, 4800, or 9600 Baud
Menu 17:	RS-232 Run time = OFF	Adjustable: ON or OFF
Menu 18:	D-Board Baudrate = 2400 Bd	Adjustable: only 2400 Baud
Menu 19:	D-Board Channel 2 = RUNNING	Adjustable: RUNNING or STANDING
Menu 20:	Beep = ON	Adjustable: ON or OFF
Menu 21:	Handicap time = 00:00:00.00	Input handicap time (no function yet)
Menu 22:	Groups = OFF	Depending of the amount of groups
Menu 23:	Change Run	Adjustable: SAME or NEXT run
Menu 24:	Change Race	You can select another race
Menu 25:	D-Board-Test	Test program for the display board
Menu 26:	ID channel 4 = b (blue)	Adjustable: b (blue) or L (left)
Menu 27:	Penalty Time = 1.500 s	Adjustable: form 0.000 to 9.999
Menu 28:	Start Channel = separate	Adjustable: SEPARATE or COMMON
Menu 29:	Rank Calculation = separate	Adjustable: SEPARATE or COMMON
Menu 30:	Print Times = OFF	Adjustable: ON or OFF
Menu 31:	Distance = 0100 m	Adjustable: 1 to 9999 m
Menu 32:	Measuring Unit = km/h	Adjustable: km/h, m/s, or mph
Menu 33:	Min. Speed = 0010 km/h	Adjustable: 1 to 9999 (km/h, m/s, or mph)
Menu 34:	Max. Speed = 0200 km/h	Adjustable: 1 to 9999 (km/h, m/s, or mph)

Start Delay Time: **Menu 1: DELAY TIME START = 1.00 s**

You can adjust the start delay time between 0.00 to 9.99 seconds.
To input the start delay time use the finish keyboard (15). Confirm the adjusted time with <ENTER>.
Pre adjusted value: 1,00 s

`Menu 1: DELAY TIME START = 1.00 s`	input delay time
`Save with: ENTER`	confirm delay time with <ENTER>

Finish Delay Time: **Menu 2:** **DELAY TIME FINISH = 0,30 s**

You can adjust the finish delay time between 0.00 and 9,99 seconds.
To input the finish delay time use the finish keyboard (15). Confirm the adjusted time with <ENTER>.
Pre adjusted value: 0,30 s

```
Menu 2: DELAY TIME FINISH = 0.30 s

Save with: ENTER
```

input delay time

confirm delay time with <ENTER>

Seconds Mode **Menu 3:** **SECONDS MODE = OFF**

Normally is the seconds mode off. If you use the seconds mode you have no minutes. This means the clock jumps at 60 seconds not to 1 minute, but continues to count 61, 62, 63, etc. This mode is necessary for some sports.

```
Menu 3: SECONDS MODE                ON  F1
                                    OFF< F2

Save with: ENTER
```

Seconds mode activated

Normal time

Pre adjusted value: Seconds mode off

Display Time 1: **Menu 4:** **DISPLAY TIME 1 = 03 s**

You can adjust the amount of time that it shows a stopped time on the display (7) or display board. This time we call display time 1. You can select the display time between 0 and 99 seconds.

```
Menu 4: DISPLAY Time 1 = 03 s

Save with: ENTER
```

input seconds with finish kb (15)

Confirm input with <ENTER>

Pre adjusted value: Display Time 1 = 3 seconds

Display Time 2: **Menu 5:** **DISPLAY TIME 2 = 03 s**

You can adjust the amount of time that it shows the second stopped time in the second heat (total time or run time) on the display (7) or display board. This time we call display time 2. You can select the display time between 0 and 99 seconds.

```
Menu 5: DISPLAY Time 2 = 03 s

Save with: ENTER
```

input seconds with finish kb (15)

Confirm input with <ENTER>

Pre adjusted value: Display Time 2 = 3 seconds

Display Thousandth: **Menu 6: DISPLAY THOUSANDTH = OFF**

Normally the display (7) does not show the 1/1000 seconds. If you want to show the 1/1000 on the display, it must shift the time two digit to the left. In this mode you can not show the hours on the display. This adjustment you can only select if you work with 1/1000 precision.

```
Menu 6: DISPLAY THOUSANDTH          OFF  F1
seconds
                                    ON<  F2
Save with: ENTER
```

F1 display shows 1/1000 seconds

F2 display shows 1/100 seconds

confirm selection with <ENTER>

on = <F1> ..... display (7) shows 1/1000 seconds, but no hours
off = <F2> ..... display (7) shows 1/100 seconds, but no 1/1000 seconds

Pre adjusted value: Display thousandth is off

Info-Display: **Menu 7: INFO-DISPLAY = START**

You can adjust the display mode during the timing for info-display (6).

```
Menu 7: INFO-DISPLAY              START<  F1
                                FINISH   F2
                                   OFF   F3
Save with: ENTER
```

Start display

Finish display

no timing information

Confirm selection with <ENTER>

Start: The info-display shows always the running time. You can only select this mode for single start in the program SPLIT. The F-keys have the following functions:
- <F1> shows first started time
- <F2> shows actual time, that means the last finish time in the first line of the display
- <F3> shows last started time

Finish: In the info-display it shows always the finish times (intermediate times). The F-keys have the following functions:
- <F1> shows the first intermediate time of finish time in the race in the top line
- <F2> shows the last stopped time in the top line of the info-dispaly (6)
- <F3> shows the last stopped time in the bottom line of the info-dispaly (6)

OFF: The info-display (6) does not show times.

Running Time: **Menu 8: RUNNING TIME = RUN**

You can select if you want to show for the second heat (third, etc.) in the display (7) and on the display board the running run time or the running total time.
E.g.: the run time for the first run of start number 5 is 1:30.45
- For heat: Time starts in the second heat form 0:00.00
- For total: Time starts in the second heat from 1:30.45

```
Menu 8: RUNNING TIME                RUN<   F1
                                    TOTAL  F2

Save with: ENTER
```

F1 shows the run time

F2 shows the total time

Confirm with <ENTER>

Pre adjusted value: Run time

Running Tenth: **Menu 9:** **Running Tenth = ON**

The finish display (7) and the interface "display board" (24) can output the running tenth second (the ALGE-display-board cannot show the running tenth second). The running tenth second is important to feed a video generator (for TV).

on = <F1> .....running tenth second is on
off = <F2> .....running tenth second is off

```
Menu 9: RUNNING TENTH                ON   F1 running tenth second is on
                                    OFF<  F2 running tenth seconds is off

Save with: ENTER                           confirm with <ENTER>
```

Pre adjusted value: running tenth seconds are on

Rank for Intermediate Time: **Menu 10:** **INTERMEDIATE RANK = ON**

You can show the rank for the intermediate time on the display (7) and display board. It shows the rank as long as you have the display time adjusted (see menu 4). If you use more than one intermediate times, then you must use for each intermediate time a separate channel (c2 to c9).

```
Menu 10: INTERMEDIATE RANK           ON<  F1   shows rank
                                    OFF   F2 no rank is shown

Save with: ENTER                           confirm with <ENTER>
```

Pre adjusted value: intermediate time rank is on

Rank for Finish Time: **Menu 11:** **FINISH RANK = ON**

For each run time (or total time) it shows the rank on display (7) and on the display board. It shows the rank as long as you have the display time adjusted (see menu 4).

```
Menu 11: FINISH RANK                 ON<  F1   shows rank
                                     OFF  F2   no rank shown

Save with: ENTER                           confirm with <ENTER>
```

Pre adjusted value: rank for finish time is on

Start Number Automatic: **Menu 12:** **STNO AUTOMATIC = OFF**

The start number input for the TdC 8000 you can automate for start and finish.

START: Only one competitor is allowed on the slope. If the competitor is in the finish the next can start. As long as the competitors start in order (1, 2, 3, 4, etc.) and no competitor does not finish you do not have to input a start number manual for start or finish.

FINISH: As many competitors can be on the slope as you want. The start number shown in display (2) goes after each start up to the next number. The start number shown in the display (7) goes after each finish up to the next number.

Start = <F1> start automatic is on
Finish = <F2> finish automatic is on
off = <F3> manual input of start numbers is necessary

```
Menu 12: STNO AUTOMATIC          START<
                                FINISH
                                   OFF
Save with: ENTER
```

F1 Automatic "START"
F2 Automatic "FINISH"
F3 Manual input of start numbers
Confirm selection with <ENTER>

Pre adjusted value: start number automatic is off

Print Start time: **Menu 13: PRINT START TIME = OFF**

You can print the start time with the start impulse. Normally it prints the start time only when you receive the finish impulse.

on = <F1> ..... prints start time with the start
off = <F2> ..... prints no start time during the start

```
Menu 13: PRINT START TIME        ON<
                                 OFF

Save with: ENTER
```

F1 print start time immediately
F2 print start time with finish
confirm selection with <ENTER>

Pre adjusted value: it prints no start time during the start (OFF)

Print Menus: **Menu 14: PRINT MENUS = ON**

Whenever you change an ALGE adjustment in the menus it prints the new adjustment (e.g. during the switch on procedure). If you select "PRINT MENUS = OFF" it will not print the menu adjustments. Also changes made in the main menu wont be printed.

on = <F1> ..... it prints the menu adjustments
off = <F2> ..... it does not print the menus adjustments

```
Menu 14: PRINT MENUS             ON<
                                 OFF

Save with: ENTER
```

F1 print menu adjustments
F2 do not print menu adjustments
confirm selection with <ENTER>

Pre adjusted value: print menu adjustments

Printer Linefeed: **Menu 15: PRINTER LINEFEED = 0**

The printer can print after each paragraph linefeed (e.g. two linefeed to have the printed lines above the cuter). You can adjust between 1 and 9 linefeeds. If you use zero (ALGE adjustment) it prints in every line.

```
Menu 15: PRINTER LINEFEED = 0


Save with: ENTER
```

input amount of linefeed
confirm selection with <ENTER>

Pre adjusted value: Printer prints in every line (printer linefeed = 0)

RS 232 Baudrate: **Menu 16: RS-232 BAUDRATE = 9600 Bd**

You can adjust the baud rate of the RS 232 interface (23) between 2400, 4800, or 9600 baud.

Menu 16: RS-232 BAUDRATE	2400 Bd F1	Select with <F1>
	4800 Bd F2	Select with <F2>
	9600 Bd F3	Select with <F3>
Save with: ENTER		Confirm selection with <ENTER>

Pre adjusted value: 9600 Baud

RS 232 Run Time: **Menu 17: RS-232 RUN TIME = OFF**

The RS 232 interface (23) outputs always in the difference-timing mode the time of day. Additional you can output the run time.

output time of day and run time = <F1>
output time of day = <F2>

Menu 17: RS-232 RUN TIME	ON	F1	output run time and time of day
	OFF<	F2	output time of day
Save with: ENTER			Confirm selection with <ENTER>

Pre adjusted value: RS-232 output is time of day

Display Board Baudrate: **Menu 18: D-Board Baudrate = 2400 Bd**

The display board works only on a baud rate of 2400. Other baud rates are not possible.

Pre adjusted value: D-Board Baudrate = 2400 Baud

Display Board Channel 2: **Menu 19: D-BOARD CHANNEL 2 = OFF**

You can adjust the channel 2 of the display board interface (24). If you have channel two on STANDING, it outputs no running time (only run times). It outputs the classement always on channel 2. You can select between channel 1 and channel 2 by turning the plug of the display board cable 180°.

Menu 19: D-BOARD CHANNEL 2	RUNNING	F1	output of running time
	STANDING<	F2	output of run times
Save with: ENTER			Confirm selection with <ENTER>

RUNNING = <F1> ..... running time and classement
STANDING = <F2> ..... run time and classement

Pre adjusted value: D-Board Channel 2 is off (running time)

Beep: **Menu 20: BEEP = ON**

The beep makes a sound for each timing impulse. The length of the beep depends on the adjusted delay time. If the beep bothers people in the timing shack it is possible to turn it off. The beep goes automatically on, as soon as you turn the TdC 8000 on.

```
Menu 20: BEEP                          ON  F1
                                      OFF< F2

Save with: ENTER
```

F1 Beep is on
F2 Beep is off

Confirm selection with <ENTER>

Pre adjusted value: Beep is on

Handicap Time: **Menu 21: HANDICAP TIME = 00:00:00.00**

Information that tell the percentage advantage or disadvantage compared to the handicap time. The handicap time is activated as soon as you input a time.

```
Menu 21: HANDICAP TIME = 00:00:00.00
(15)


Save with: ENTER
```

Input handicap time with keyboard

Confirm with <ENTER>

Output on the printer:

```
 0012 SZ 10:58:11.320
      ZZ 10:58:41.693
      RT     0:30.37
HANDICAP:   +001.60%
```

Pre adjusted value: no handicap calculation, Handicap = 00:00:00.000

Input of Groups: **Menu 22: GROUPS = OFF**

If you want to show the rank within groups or make a group classement it is necessary to input the groups. You can input the groups when you start the TdC 8000 or in the main menu. In the main menu you can also correct groups.

```
Menu 22: GROUPS      Gr  1:    1 >    0


Save with: ENTER
```

Input always the last start number of a group

Confirm with <ENTER>

- input the last start number of the first group
- press <ENTER> to confirm
- input the last start number of the second group
- press <ENTER> to confirm
- continue as before
- after you input the last group you have to press <ENTER> twice

Attention: Leave always empty start numbers for each group for late entries!

Pre adjusted value: no groups

Select Heat: **Menu 23: CHANGE HEAT**

You do not have to turn the TdC 8000 off to switch form one heat (e.g. heat 1) to the next heat (e.g. heat 2).

Select Heat:	SAME (1)<	F1	Continue in the same heat
	NEXT (2)	F2	Select a new heat
Save with: ENTER			Confirm with <ENTER>

You can select if you want to continue in the same heat or if you want to continue in the next heat.

Attention: When you select the next heat, it is impossible to switch back to the previous heat.

Select Race: **Menu 24: CHANGE RACE**

You do not have to turn the TdC 8000 off to switch form one race to another.

If you press <YES> or <ENTER> you can select automatically the race. You will see the same selection as you have when you turn the TdC 8000 on. If you change a race within the menu you do not have to make a new synchronisation.

Display Board Test: **Menu 25: D-BOARD-TEST = OFF**

In this menu you can check the display board. If you have digits that do not work as they should, use this test to check them. Use the test <F4> especially if you use the display board the first time after a long time or if you have very could weather (frozen segments).

With <F1>, <F2>, <F3>, or <F4> you can select the test mode. The arrow at the right end of the display shows the selected test. To leave the display board test press <ENTER>.

Menu 25: D-BOARD-TEST	123456789<	F1	
	0	F2	
	8	F3	
Continue: ENTER	888888888	F4	Exit with <ENTER>

123456789	<F1> ..... each digit shows its position number
0	<F2> ..... each single digit counts form 0 to 9
8	<F3> ..... each single digit switch between blank and 8
888888888	<F4> ..... all digits switch between blank and 8

Pre adjusted value: GAZ-Test is not active

ID for Channel 4 in Parallel Slalom: **Menu 26: ID CHANNEL 4 = b (blue)**

You can select the ID for winner on channel 4 in parallel slalom (for printer, display board, and RS 232). Depending on what you want to output for the winner course, red and blue, or right and left you can select the output of channel 4 with "b" or "L".

```
Menu 26: ID CHANNEL 4          b (blue)< F1
                               l (left)  F2

Save with: ENTER
```

Pre adjusted value: ID channel 4 = b (blue)

Penalty Time for Parallel Slalom: **Menu 27: Penalty Time = 1.500 s**

If a competitor does not finish the first run, he gets a penalty time for the second run. This penalty time you can input in this menu.
If you want to work without penalty time input 0.000 as penalty time.
The finish difference time starts to run, when the first competitor reaches the finish. If the second competitor does not reach the finish before the time reaches the penalty time, it will show the penalty time on the display (7) and on the display board.

```
Menu 27: PENALTY TIME = 1.500 s


Save with: ENTER
```

Pre adjusted value: Penalty Time = 1.500 seconds

Start Channel for Dual Timer: **Menu 28: START CHANNEL = SEPARATE**

You can select for the Dual Timer, if you want the start channel for both courses separate, or for both together. If you select both start courses common, it will start with an impulse of channel 0 or 3 both times.

```
Menu 28: START CHANNEL           COMMON  F1
                               SEPARATE< F2

Save with: ENTER
```

F1 parallel start
F2 separate start

Pre adjusted value: Start Channel = separate

Rank Calculation for Dual Timer: **Menu 29: RANK CALCULATION = SEPARATE**

You can select for the Dual Timer, if you want the rank calculation for both courses separate, or for both together. If you select the rank calculation common, it will calculate the total rank for, otherwise the rank for each course separate.

```
Menu 29: RANK CALCULATION        COMMON  F1
                               SEPARATE< F2

Save with: ENTER
```

F1 total rank
F2 rank for each course separate

Pre adjusted value: Rank Calculation = separate

Printing Times when Measuring Speed: **Menu 30: PRINT TIMES = OFF**

You can print the times of the speed measurement in program 7 "SPEED" as well. If you put this menu on it will the time of day of the photocells, and the run time additional to the speed.

```
Menu 30: PRINT TIMES                ON   F1
                                   OFF<  F2

Save with: ENTER
```

F1 times and speed
F2 only speed
Confirm with <ENTER>

Print times = off:

```
0001 km/h     144.23
0002 km/h     120.08
```

Print times = on:

```
0001 C0  13:49:41.850
0001 C1  13:49:42.100
     RT       0:00.249
     km/h      144.23
0002 C0  13:59:45.241
0002 C1  13:59:45.541
     RT       0:00.299
     km/h      120.08
```

Pre adjusted value: Print time = off

Measuring Distance for Speed Measurement: **Menu 31: DISTANCE = 0100 m**

You can adjust the measuring distance for SPEED (program 7) form 1 to 9999 m. Independent from the measuring unit you must use always Meter to input the measuring distance.

```
Menu 31: DISTANCE = 0100 m


Save with: ENTER
```

input measuring distance
Confirm with <ENTER>

Pre adjusted value: Distance = 0100 m

Measuring Unit for Speed Measurement: **Menu 32: MEASURING UNIT = km/h**

You can select the measuring unit for the speed measurement in the SPEED (program 7) form 1 to 9999 m. As measuring distance you can select between km/h (kilometre per hour), m/s (meter per second), or mph (miles per hour).

```
Menu 32: MEASURING UNIT             kmh<  F1
                                    mps   F2
                                    mph   F3
Save with: ENTER
```

F1 kilometre per hour
F2 meter per second
F3 miles per hour
Confirm with <ENTER>

Pre adjusted value: measuring distance = km/h

Minimum Speed: **Menu 33: MIN. SPEED = 0010 km/h**

You can input the minimal speed, this means no speed below this value will be measured. You can input a value between 1 and 9999.

If you change in menu 32 the measuring unit, it will use this new measuring unit as well in this menu. The speed will be automatically changed to the equal value of the new measuring unit.

`Menu 33: MIN. SPEED = 0010 kmh`	input the minimum speed
`Save with: ENTER`	Confirm with <ENTER>

Pre adjusted value: minimum speed = 10 km/h

Maximum Speed: **Menu 33: MAX. SPEED = 0200 km/h**

You can input the maximal speed, this means no speed above this value will be measured. You can input a value between 1 and 9999.

If you change in menu 32 the measuring unit, it will use this new measuring unit as well in this menu. The speed will be automatically changed to the equal value of the new measuring unit.

`Menu 33: MAX. SPEED = 0200 kmh`	input the maximum speed
`Save with: ENTER`	Confirm with <ENTER>

Pre adjusted value: maximum speed = 200 km/h

6. PROGRAMS

The TdC 8000 has a very flexible software that suits for most timing problems.

You can select the following programs:

Programm	Program Number	Page
Split	Program 1	63
Sequential	Program 2	in preparation
Split Sequ.	Program 3	66
Parallel Diff.	Program 4	70
Parallel Net	Program 5	74
Dual Timer	Program 6	80
Speed	Program 7	84
Speed Skiing	Program 8	88
TdC Test	Program 9	90

To can select between the programs when you turn the TdC 8000 on. After about 5 seconds it shows the program that you used last time. Press <ENTER>, if you want to select this program.

Use the cursor keys (↓ and ↑) to select another program. When it shows the correct program in the info-display (6) press <ENTER>.

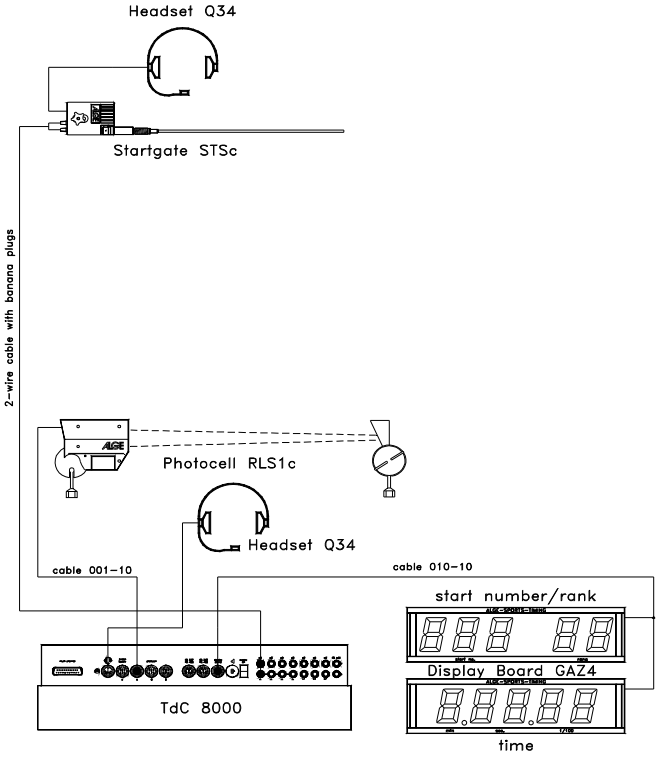
You can also input the program number direct with the finish keyboard (15). Confirm the number with <ENTER>.

6.1. SPLIT: Program 1

Net timing with up to 256 heats and up to 9999 competitors on the slope (e.g. Alpine Skiing, Nordic Skiing, Time Trail for Cycling). You have a start channel (c0), a finish channel (c1) and up to eight intermediate channels (c2 to c10).

The program SPLIT can make up to 256 heats.

For the second (third, etc.) heat you can adjust if you want to display the run time or total time.



e.g.: Alpine Ski or Cross Country Skiing:
Connect the TdC 8000 with a two wire cable with Startgate (c0).

The starter can communicate with the operator of TdC 8000 by using the headset Q34.

Connect the photocell RLS1c with the TdC 8000 (19 or 20) by using cable 0001-10.

The display board shows the run times and the start number and rank.

You can use additional photocells for the intermediate times.

Adjustment:

- Switch TdC 8000 on (switch 26)
- Select program SPLIT with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Select precision (e.g. <F3> for 1/100 precision)
- Press <ENTER>
- Select the timing mode (e.g. <F2> for difference timing
- Press <ENTER>
- Select start mode (e.g. <F1> for single start
- Press <ENTER>
- Press <YES> if you want to input groups for the race, otherwise <NO> or <ENTER>
  - if you input the groups input always the last start number within a group
  - confirm each start number with <ENTER>
  - after the start number of the last group you must press <ENTER> twice

- Synchronize the TdC 8000 (with time of day and other timing devices)
  - press <F1> if the finish display (7) shows the correct time of day
    - wait until TdC 8000 gives at the next full minute the synchronize signal to external devices (you are now ready for timing)
  - press <F2> if the finish display (7) shows the wrong time of day
    - input the time of day, confirm it with <ENTER> and make a start signal (channel 0 or press <START>

Race operation:

- Switch (1) in upper position
- Input the start number for the start with start keyboard (9) (#1)
- Press <ENTER>
- The start-display (2) must show the correct start number (and group)
- Input the start number for the finish with finish keyboard (15) (#1)
- Press <ENTER>
- The finish-display (8) must show the correct start number (and group)
- Start number 1 starts
- Display (7) shows the running time of start number 1
- The start display (2) changes automatically to the next free start number 2
- Start number 2 starts
- The start display (2) changes automatically to the next free start number 3
- Start number 1 goes through the finish
- The finish display (7) shows the run time of start number 1
- Start number 3 start
- The start display (2) changes automatically to the next free start number 4
- Press <ENTER> of the finish keyboard (15)
- Display (7) shows the running time and display (8) the start number 2
- Start number 2 goes through the finish
- The finish display (7) shows the run time of #2
- etc.

Timing Channels:

c0 =	start channel	c5 =	intermediate time channel
c1 =	finish channel	c6 =	intermediate time channel
c2 =	intermediate time channel	c7 =	intermediate time channel
c3 =	intermediate time channel	c8 =	intermediate time channel
c4 =	intermediate time channel	c9 =	intermediate time channel

ALGE adjustment for the main menu:

Menu 1:	Delay Time Start =	1.00 s	
Menu 2:	Delay Time Finish =	0.30 s	
Menu 3:	Seconds Mode =	OFF	
Menu 4:	Display Time1 =	03 s	
Menu 5:	Display Time 2 =	03 s	
Menu 6:	Display Thousandth =	OFF	
Menu 7:	Info-Display =	START	
Menu 8:	Running Time =	RUN	
Menu 9:	Running Tenth =	OFF	
Menu 10:	Intermediate Rank =	ON	
Menu 11:	Finish Rank =	ON	
Menu 12:	STNO Automatic =	OFF	
Menu 13:	Print Start Time =	OFF	
Menu 14:	Print Menus =	ON	
Menu 15:	Print Linefeeds =	0	
Menu 16:	RS-232 Baudrate =	9600 Bd	
Menu 17:	RS-232 Run time =	OFF	
Menu 18:	RS-232 Baud rate =	2400	
Menu 19:	D-Board Channel 2 =	RUNNING	
Menu 20:	Beep =	ON	
Menu 21:	Handicap time =	00:00:00.00	
Menu 22:	Groups =	OFF	
Menu 23:	Change Run		
Menu 24:	Change Race		
Menu 25:	D-Board-Test		

Printer: Printing example

Heat 1:

```
0001 ST 10:05:58.990
     FT 10:07:20.234
     RT      1:21.24
```

start time
finish time
run time

Heat 2:

```
0001 ST  10:07:01.485
     FT  10:08:22.385
     RT      1:20.90
     MT      1:21.24
     TT      2:42.14
```

start time
finish time
run time
memory time
total time

Display Board GAZ4:

You can show the net time (running time) on one and the start number and rank on another display board. The display board shows always the actual start number that is shown in the finish display (8) (on the display board you can show the start number only with three digit and the rank with two digit).

In the main menu (menu 19, see page 56) it is possible to activate display board channel 2 . If you activate channel 2 it shows only the run times on the display board.

RS 232 interface: see on page 96, chapter 8.2

6.2. Sequential: Program 2

Program in preparation!

6.3. Split-Sequential: Program 3

Net timing and lap timing for events with single starts, or mass start. You can have as many competitors on the course as you want. This program is used e.g. for relay in Nordic Skiing. You can use a start channel, an intermediate channel, and up to 8 intermediate channels.

If you select the Split-Sequential program you must input the amount of laps prior to the race. The time stops for each a competitor on the display and display board for the adjusted display time 1 and starts then to run again.

You can make up to 256 heats with this program. If you start a new heat, it takes the total times of the previous heats.

You can adjust, if you want to start the time in the second heat (or a higher heat) from zero, or as total time.

The Split-Sequential program has no Group-Function!

Adjustment:
- Switch TdC 8000 on (switch 26)
- Select program 3 SPLIT-SEQU. with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Input the amount of laps, e.g. 3, and confirm it with <ENTER>.
- Select precision (e.g. <F3> for 1/10 precision)
- Press <ENTER>
- Select the timing mode (e.g. <F2> for difference timing
- Press <ENTER>
- Select start mode (e.g. <F2> for mass start
- Press <ENTER>
- Synchronize the TdC 8000 (with time of day and other timing devices)
  - press <F1> if the finish display (7) shows the correct time of day
    - wait until TdC 8000 gives at the next full minute the synchronize signal to external devices (you are now ready for timing)
  - press <F2> if the finish display (7) shows the wrong time of day
    - input the time of day, confirm it with <ENTER> and make a start signal (channel 0 or press <START>

Race operation e.g. with mass start and three laps:
- Switch (1) in upper position
- For mass start you do not have to input the start number for the start.
- The start display (2) shows "1" in the group field.
- Input the start number for the finish with finish keyboard (15) (e.g. #1)
- Press <ENTER>
- The display (8) must show the correct start number and the display (7) must show the time zero.
- You get a start impulse that starts all competitors (mass start).
- Display (2) shows now 1u (u = used, which means that the start is done).
- Display (7) shows the running time, and display (8) shows start number 1 and at the group position 1 for first lap.
- Start number 1 goes the first time through the finish.
- The finish display (7) shows the run time of start number 1 for a few seconds (depending on the adjusted display time 1 in menu 4), then it shows again the running time. Display (8) shows still start number 1, but the lap counts up to 2.

- Start number 1 goes the second time through the finish.
- The finish display (7) shows the run time of start number 1 for a few seconds (depending on the adjusted display time 1 in menu 4), then it shows again the running time. Display (8) shows still start number 1, but the lap counts up to 3.
- etc.
- Start number 1 goes the third time through the finish.
- The finish display (7) shows the run time. Display (8) shows still start number 1, and lap 3.
- etc.

Lap Time Correction:
You cannot correct a lap time direct. A lap time will be corrected, when you correct a time of day of channel 0 or 1, or a run time.

Timing Channels:

c0 = start channel	c2 = intermediate time	c4 = intermediate time	c6 = intermediate time	c8 = intermediate time
c1 = finish channel	c3 = intermediate time	c5 = intermediate time	c7 = intermediate time	c9 = intermediate time

ALGE adjustment for the main menu:

Menu 1:	Delay Time Start = 1.00 s	Menu 14:	Print Menus = ON
Menu 2:	Delay Time Finish = 0.30 s	Menu 15:	Print Linefeeds = 0
Menu 3:	Seconds Mode = OFF	Menu 16:	RS-232 Baudrate = 9600 Bd
Menu 4:	Display Time 1 = 03 s	Menu 17:	RS-232 Run time = OFF
Menu 5:	Display Time 2 = 03 s	Menu 18:	RS-232 Baud rate = 2400
Menu 6:	Display Thousandth = OFF	Menu 19:	D-Board Channel 2 = RUNNING
Menu 7:	Info-Display = START	Menu 20:	Beep = ON
Menu 8:	Running Time = RUN	Menu 21:	Handicap time = 00:00:00.00
Menu 10:	Intermediate Rank = ON	Menu 22:	Groups = OFF
Menu 11:	Finish Rank = ON	Menu 23:	Change Run
Menu 12:	STNO Automatic = OFF	Menu 24:	Change Race
Menu 13:	Print Start Time = OFF	Menu 25:	D-Board-Test

Printer: Printing example

Heat 1:

```
0001 ST  10:00:00.000
     FT  10:10:20.234
     RT     10:20.2
   1 SQ     10:20.2
```

Start Time
Finish Time
Run Time
Lap Time of the 1st Lap (same as run time for the 1st lap)

```
0001 ST  10:00:00.000
     FT  10:20:39.334
     RT     20:39.3
   2 SQ     10:19.1
```

Start Time
Finish Time
Run Time
Lap Time of the 2nd Lap

Heat 2:

```
0001 ST  14:00:00.000
     FT  14:11:20.541
     RT     11:20.5
   1 SQ     11:20.5
     MT     20:39.3
     TT     31:59.8
```

Start Time
Finish Time
Run Time
Lap Time of the 1st Lap (same as run time for the 1st lap)
Memory Time (of the 1st heat)
Total Time (time of the 1st heat plus run time of the 2nd heat)

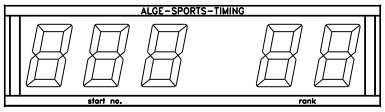
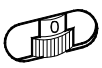
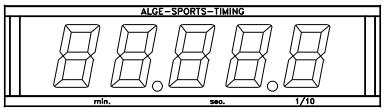
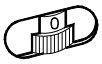
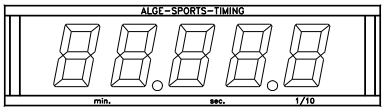
```
0001 ST  14:00:00.000
     FT  14:22:00.401
     RT     22:00.4
   2 SQ     10:49.9
     MT     20:39.3
     TT     42:39.7
```

Start Time
Finish Time
Run Time
Lap Time of the 2st Lap
Memory Time (of the 1st heat)
Total Time (time of the 1st heat plus run time of the 2nd)

Display Board GAZ4:

You can show on different display boards:
start number and rank, running time and run time, and lap time (sequential time)

In the main menu (menu 19, see page 56) it is possible to activate display board channel 2 . If you activate channel 2 it shows only the run times, but not the running time on the display board.

start number / rank:		 thumb wheel switch on 0	toggle switch upper position
time:		 thumb wheel switch on 0	toggle switch middle position
lap time (sequential):		thumb wheel switch on 1	toggle switch middle position

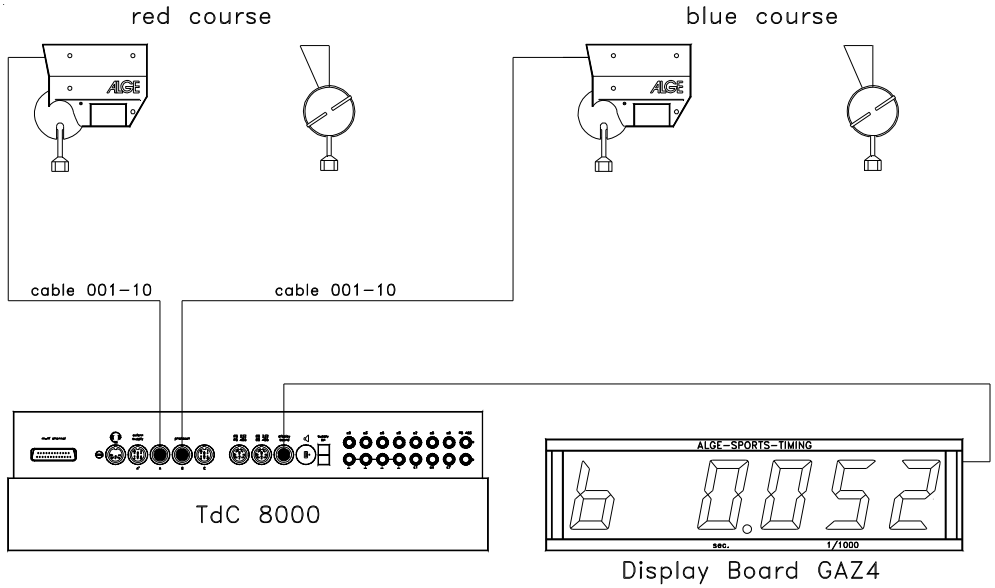
RS 232 interface: see on page 96, chapter 8.2

Output of all time of day, like for the SPLIT program. If you want the output of the calculated times as well you have to select it in the Menu " RS232 Run Time = on"

6.2. Parallel Slalom:

6.2.1. Parallel Diff. (Parallel Slalom with Finish-Difference-Time): Program 4

- Each competitor pair gets a run number (counts automatic up from 1 to 9999).
- In the finish you need two photocells, one for the red course, one for the blue.
- The first photocell impulse starts the timing, the second stops the time.
- The display (7) shows the finish difference time and the winner course (b = blue, r = red).
- A cable from the start to the finish is for this timing mode not necessary.
- Connect the photocell of the red course on channel 1 (cable 001-10 on socket 19 or 20).
- Connect the photocell of the blue course on channel 4 (cable 001-10 on socket 21).



Display Board GAZ4

Adjustment:
- Switch TdC 8000 on (switch 26)
- Select program PARALLEL SLALOM WITH FINISH-DIFFERENCE-TIME with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Synchronize the TdC 8000 (with time of day and other timing devices)
  - Press <F1> if the finish display (7) shows the correct time of day
    - Wait until TdC gives at the next full minute the synchronize signal to external devices
    - The TdC 8000 is now ready for timing
  - Press <F2> if the finish display (7) shows the wrong time of day
    - Input the time of day with the finish keyboard (15), and confirm it with <ENTER>
    - Start the clock with a start signal (channel 0 or press <START> key)
    - The TdC 8000 is now ready for timing

Race operation:
- Switch (1) in upper position.
- Display (2) and (8) show automatically run number 1.
- If you want to input another run number input it with keyboard (9) or (15) and confirm it with <ENTER>.
- Display (2) and (8) must show the correct run number
.- Display (7) shows the time 0:000
- Press <ALT> and <MENU> together to get into the main menu.

- Input 26 with finish keyboard (15).
- It shows now menu 26 and you can check the penalty time.
  - If the penalty time is correct, press <ALT> and <MENU> together to leave the main menu.
  - If the penalty time is not correct press <YES>
    - Input the penalty time with the finish keyboard (15).
    - Confirm the penalty time with <ENTER>
    - Leave the main menu by pressing <ALT> and <MENU> together.
- The TdC 8000 is not connected to the start and therefore does not get a start signal.
- Display (7) shows the running finish-difference-time and the identification of the winning course, when the first competitor goes through the finish.
- Display (7) shows the finish-difference-time and the identification of the winning course.
- Press <ENTER> to increase the run number for the next race.
- Display (2) and (8) must show the next run number.
- Display (7) shows the time 0:000
- etc.

Penalty Time:
The penalty time is used as finish difference time, if somebody fails to finish the first heat. If you want to work without penalty time input 0.000 as penalty time.
If one competitor comes through the finish it shows the running time in the display (7) and on the display board until the second competitor comes through the finish. If the second competitor does not reach the finish or reaches the finish after the penalty time is over, it shows on the display (7) and display board the penalty time. It marks the penalty time on the printer with "P".
You can input the penalty time in the main menu in menu 27 (see page 59).

Clear Finish Times:
If you press the key <CLEAR> of the start keyboard (9) or finish keyboard (15), it clears the finish impulses. I clears the finish impulse of the red and blue course, if both finished before you press <CLEAR>.

Deactivate the Impulse Channels (<BLOCK>):
You can deactivate each course separate.
If you press <BLOCK> of the start keyboard (9), it prints the time of the blue course (c4) as a non valid time.
If you press <BLOCK> of the finish keyboard (15), it prints the time of the red course (c1) as a non valid time.
If you press <ALT> and <BLOCK> at the same time, it does not take the time of that impulse.

Timing Channels:

c0 = no function	c2 = no function	c4 = finish channel blue	c6 = no function	c8 = no function
c1 = finish channel red	c3 = no function	c5 = no function	c7 = no function	c9 = no function

ALGE adjustment for the main menu:

Menu 2:	Delay Time Finish = 0.30 s	Menu 17:	RS-232 Run time = OFF
Menu 3:	Seconds Mode = OFF	Menu 18:	D-Board Baudrate = 2400 Bd
Menu 4:	Display Time 1 = 03 s	Menu 19	D-Board Channel 2 = RUNNING
Menu 9:	Running Tenth = OFF	Menu 20:	Beep = ON
Menu 12:	STNO Automatic = OFF	Menu 24:	Change Race
Menu 14:	Print Menus = ON	Menu 25:	D-Board-Test
Menu 15:	Print Linefeeds = 0	Menu 26:	ID channel = b (blue)
Menu 16:	RS-232 Baudrate = 9600 Bd	Menu 27:	Penalty Time

Display:
- Display (2) and (8) shows the run number.
- Display (7) shows the finish difference time and winners course
- The Info-Display (6) has no function for the parallel slalom timing.

Printer: Printing example

```
 0001     r      - 1.231
 0002     b      - 0.429
P0003     b      - 1.500
?0003 C1   10:15:34.237
 0004     r      - 0.217
c0004     r      - 0.217
```

run number 1: red course wins with 1.231 sec. advance
run number 2: blue course wins with 0.429 sec. advance
run number 3: blue course wins with 1.500 sec. advance
run number 3: not valid impulse
run number 4: red course wins with 0.217 sec. advance
run number 4 is cleared

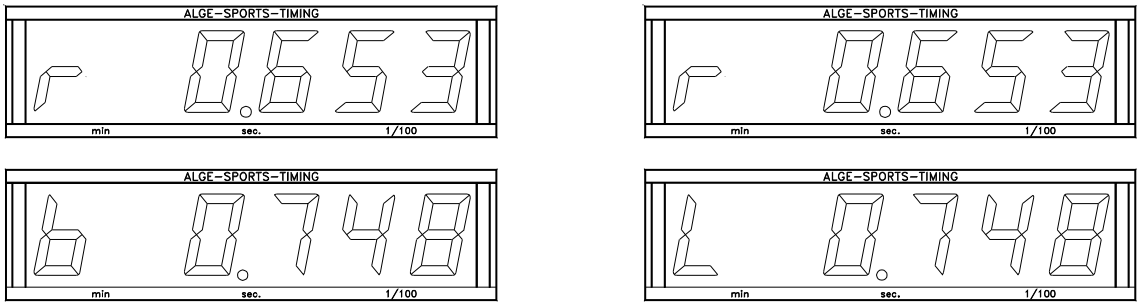
Photocells for the Finish:

- Connect the photocell for the red course at the TdC 8000:
  For cable 001-10, 001-20, or 001-30 use socket A´(19) or A (20).
  If you have an external supply for the photocell, it is possible to use a 2-wire cable. Connect this cable at channel c1 (27).
- Connect the photocell for the blue course at the TdC 8000:
  For cable 001-10, 001-20, or 001-30 use socket B (21).
  If you have an external supply for the photocell, it is possible to use a 2-wire cable. Connect this cable at channel c4 (27).

Display Board GAZ4:

You can show the finish-difference-time and the winner course on a display board (b= blue, r=red).

In the main menu (menu 26, see on page 59) you can adjust, if it should show for the winner course red (r) and blue (b), or right (r) and left (L).



In the main menu (menu 19, see on page 56) it is possible to activate display board channel 2. If you activate channel 2 it shows only the run times on the display board.

Transfer Format: 1 start bit, 8 data bit, no parity bit, 1 stop bit
Transfer Speed: 2.400 Baud
Transfer Protocol: ASCII

NNNPxxxxxxxxx:Sz:ht(CR)	standing time before a runner reaches the finish
NNNPxxxxxxxbS:Sxxxx(CR)	running finish difference time (blue course wins, without 1/10)
NNNPxxxxxxx§S:Sxxxx(CR)	running finish difference time (r course wins, without 1/10)
NNNPxxxxxxx$S:Sxxxx(CR)	running finish difference time (left course wins, without 1/10)
NNNPxxxxxxxbS:Szxxx(CR)	running finish difference time (blue course wins, with 1/10)
NNNPxxxxxxx§S:Szxxx(CR)	running finish difference time (r course wins, with 1/10)
NNNPxxxxxxx$S:Szxxx(CR)	running finish difference time (left course wins, with 1/10)
NNNPxxxxxxxbS:Sz ht(CR)	finish difference time (blue course wins)
NNNPxxxxxxx§S:Sz ht(CR)	finish difference time (r course wins)
NNNPxxxxxxx$S:Sz ht(CR)	finish difference time (left course wins)

x ..... blank
NNN ..... run number

P ..... identification for parallel slalom
§ ..... r (red/right) course (0A Hex.; always character 12)
$ ..... L (left) course (0C Hex.; always character 12)
b ..... b (blue) course (always character 12)
S ..... seconds (on ten digit it does not show a zero)
z ..... 1/10 seconds
h ..... 1/100 seconds
t ..... 1/1000 seconds
(CR) ..... Carriage Return

Output through the RS 232c interface:

Transfer Format: 1 start bit, 8 data bit, no parity bit, 1 stop bit
Transfer Speed: 9.600 Baud pre adjusted (adjustable: 2400, 4800, 9600)
Transfer Protocol: ASCII

```
xNNNNxC4xxHH:MM:SS.zhtqxxxxxxxx(CR)
xNNNNxC1xxHH:MM:SS.zhtqxxxxxxxx(CR)
?NNNNxC4xxHH:MM:SS.zhtqxxxxxxxx(CR)
?NNNNxC1xxHH:MM:SS.zhtqxxxxxxxx(CR)
cNNNNxC4xxHH:MM:SS.zhtqxxxxxxxx(CR)
cNNNNxC1xxHH:MM:SS.zhtqxxxxxxxx(CR)
```

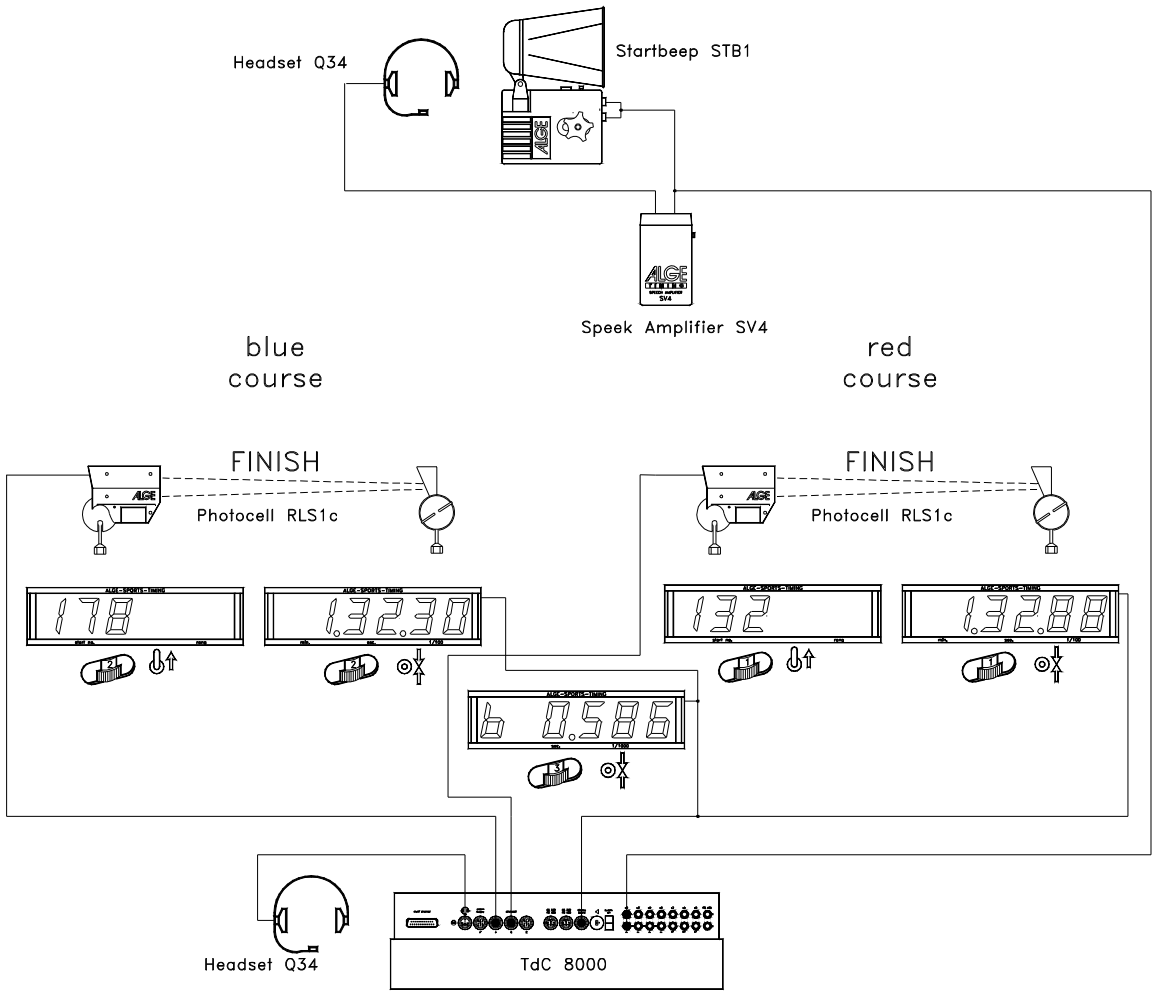
The following string will be only sent if you have the following setting in the main menu:
Menu 16: RS 232 run time = on

```
xNNNNxrxxxHH:MM:SS.zht(CR)
xNNNNxbxxxHH:MM:SS.zht(CR)
xNNNNxlxxxHH:MM:SS.zht(CR)
cNNNNxrxxxHH:MM:SS.zht(CR)
cNNNNxbxxxHH:MM:SS.zht(CR)
cNNNNxlxxxHH:MM:SS.zht(CR)
```

x ..... blank
NNNN ..... run number
c1 ..... channel 1 (red course)
C1M ..... channel 1 (red course, manual finish impulse from key <STOP>)
C4 ..... channel 4 (blue course)
C0M ..... channel 0 (blue course, manual finish impulse from key <START>
r ..... red/right course
b ..... blue course
l ..... left course
HH:MM:SS.zht ..... time in hours, minutes, seconds and 1/1000 seconds
HH:MM:SS.zhtq .... time in hours, minutes, seconds and 1/10000 seconds
? ..... not valid time
c ..... time with key <CLEAR> cleared
(CR) ..... carriage return

6.4.2. Parallel Net (Parallel Slalom with Finish Difference Time and Net Time): Program 5

Parallelslalom with the possibility to measure the run times and difference time. It is possible to measure both runs. In this case you will get the run times, total times, the difference time of the run, and the total difference time.



Adjustment:

- Switch TdC 8000 on (switch 26)
- Select program PARALLEL NET with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Select precision (e.g. <F4> for 1/1000 pecision)
- Press <ENTER>
- Synchronize the TdC 8000 (with time of day and other timing devices)
  - Press <F1> if the finish display (7) shows the correct time of day
    - Wait until TdC gives at the next full minute the synchronize signal to external devices
    - The TdC 8000 is now ready for timing
  - Press <F2> if the finish display (7) shows the wrong time of day
    - Input the time of day with the finish keyboard (15), and confirm it with <ENTER>
    - Start the clock with a start signal (channel 0 or press <START> key)
    - The TdC 8000 is now ready for timing

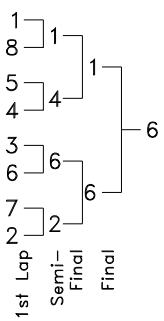
Race operation:
- Input start number for the blue (left) course with keyboard (9), e.g. StNo. 1.
- Press <ENTER>.
- Display (2) must show the start number of the blue (left) course.
- Input start number for the red (right) course with keyboard (15), e.g. StNo. 2.
- Press <ENTER>.
- Display (8) must show the start number of the red (right) course.
- The Info-Display (6) shows the start number and time of the blue (left) and red (right) course.
- Start the first pair of competitors (channnel c0 or c1, the start key does not work).
- Display (2) and (8) shows the start number and "u" (= used).
- The info display (6) shows the start number of the blue (left) and red (right) course as well as the running times.
- Finish impulse for start number 1.
- Finish impulse for start number 2.
- The info-display (6) shows the start number and run time of the blue (left) and red (right) course, as well as the difference time next to the winners time.
- You can input the start numbers of the next competitors as before.
- etc.

Race operation for the 2nd heat:
Change Race:
- All races for the 1st heat must be finished.
- Press <ALT> and <MENU> at the same time.
- Input number 23 with finish keyboard (15).
- The info-display (6) shows now "CHANGE HEAT".
- Press <YES> to confirm.
- Press <F2> to select the next heat.
- Press <ENTER> to confirm, now it changes to the new heat.

In the 2nd heat you have the same start numbers compeating each other, but they change the course.
The racer that had in the first heat the red course takes for the 2nd heat the blue course, and the vice versa.
If you input a start number for the correct slope it shows you atuomatically the right second start number.
Make sure that you have set menu 8 on "RUNNING TIME = RUN".

- Input start number for the blue (left) course with keyboard (9), e.g. StNo. 2.
- Press <ENTER>.
- It shows the correct start number for the red (right) course automatically, e.g. StNo. 1.
- Display (2) shows the start number of the blue (left) course.
- Display (8) shows the start number of the red (right) ocurse.
- The Info-Display (6) shows the start number and time of the blue (left) and red (right) course.
- Nest to the winner of the first heat it shows the difference time form the first heat.
- Start the first pair of competitors (channnel c0 or c1, the start key does not work).
- Display (2) and (8) shows the start number and "u" (= used).
- The info display (6) shows the start number of the blue (left) and red (right) course as well as the running times.
- Finish impulse for start number 1.
- Finish impulse for start number 2.
- The info-display (6) shows the start number and run time of the blue (left) and red (right) course, as well as the difference time next to the winners time.
- When the display time 1 finish it shows the total time of each competitor and the total difference time.
- You can input the start numbers of the next competitors as before.
- etc.

Further Laps:
Each time when a competitor meets another competitor it is considered as a new lap. This means in the fist lap e.g. number 1 meets number 8, and number 5 meets number 4. After the second heat reaches the competitor with the faster total run time the next lap.
Before you start a new lap, it is necessary to confirm it with the TdC 8000.
Change to menu 23 and confirm "CHANGE HEAT" and "NEXT".



Tastenfunktionen:

	blue (left) (keyboard 9 or 14)	***red (right) (keyboard 15 or 14)***
clear finish time:	CLEAR	CLEAR
recall finish time:	ALT + CLEAR	ALT + CLEAR
not valied finish times:	BLOCK	BLOCK
ignore finish times:	ALT + BLOCK	ALT + BLOCK
no function	INPUT	INPUT
no function	MENU + INPUT	MENU + INPUT
no function	F1	F1
no function	F2	F2
no function	F3	F3
change beween run time and total time	F4	F4
no function	CLASS.	CLASS.

Penalty Time:
The penalty time is used as finish difference time, if somebody fails to finish the first heat. If you want to work without penalty time input 0.000 as penalty time.
If one competitor comes through the finish the difference time starts to run, until the second competitor comes through the finish. If the second competitor does not reach the finish or reaches the finish after the penalty time is over, it shows on the display (7) and on the display board the penalty time. It marks the penalty time on the printer with "P".
You can input the penalty time in the main menu in menu 27 (see page 59).

Clear Finish Times:
Each course has a <CLEAR> key.
<CLEAR> from keyboard (9) ..... blue (left) course
<CLEAR> from keyboard (15) ..... red (right) course
With <CLEAR> you clear the last impulse of the time of appropriate course. This means if you press <CLEAR> after the start, it will set the time back to zero. If you press <CLEAR> after the racer reaches the finish, it will show the running time again. If you press agin <CLEAR> it will clear also the start time.
By pressing <ALT> and <CLEAR> it makes the last cleard time valued.
If you use a penalty time (menue 27) it shows you automatically after clearing a finish time a new time calculated with the penalty time (when the other course has already a finish time).

Block Finish Times:
You can block the finish time of each course separate.
If you press <BLOCK> of keyboard (9) it prints the finish time (c1) of the blue (left) course as a not valid time with a question-mark (?).
If you press <BLOCK> of keyboard (15) it prints the finish time (c4) of the red (right) course as a not valid time with a question-mark (?).
If you press <ALT> and <BLOCK> together, it will not take the finish impulse of the course at all.

Changing Times: <INPUT> has no function!

Classement: <CLASS> has no function!

Course Identification:
It identifies the courses with b (= blue) and r (= red), or l (= left) and r (= right). You can select in the main menu if you want the identification b or L (Menu 26: ID CHANNEL 4).

Photocells for the Finish:
- the red (right) course must be connected with channel 1 (cable 001-10 at socket 20)
- the blue (left) course must be connected with channel 4 (cable 001-10 at socket 21)

Photocells for the First Intermediate Time:
- the red (right) course must be connected with channel 2.
- the blue (left) course must be connected with channel 5.

Photocells for the Second Intermediate Time:
- the red (right) course must be connected with channel 6.
- the blue (left) course must be connected with channel 7.

Photocells for the Third Intermediate Time:
- the red (right) course must be connected with channel 8.
- the blue (left) course must be connected with channel 9.

Timing Channels

c0 = Start (= C3)	c2 = Intermed. 1 red	c4 = Finish, blue	c6 = Intermed. 2 red	c8 = Intermed. 3 red
c1 = Finish, red	c3 = Start (= C0)	c5 = Intermed. 1 blue	c7 = Intermed. 2 blue	c9 = Intermed. 3 blue

ALGE adjustments for the main menu:

Menü 1:	Delay Time Start = 1.0 s	Menü 16:	RS-232 Baudrate = 9600 Baud
Menü 2:	Delay Time Finish = 0.3 s	Menü 17:	RS-232 Run time = off
Menü 3:	Seconds Mode = off	Menü 18:	D-Board Baudrate = 2400 Baud
Menü 4:	Display Time1 = 3 s	Menü 19:	D-Board Kanal 2 = running
Menü 5:	Display Time 2 = 3 s	Menü 20:	Beep = on
Menü 8:	Running Time = run	Menü 24:	Change Heat
Menü 9:	Running Tenth = off	Menü 24:	Change Race
Menü 13:	Print Start Time = off	Menü 25:	D-Board-Test = off
Menü 14:	Print Menues = on	Menü 26:	ID Channel 4 = b (blue)
Menü 15:	Print Linefeed = 0	Menü 27:	Penalty Time = 1.500 Sek.

Display (2):
Shows the start number of the blue (left) course. Additional it shows the position of switch (1) and the condition of the competitor (no identification = not started, "u" = used or started, r = run time, t = total time (only in the 2nd heat)).

Display (8):
Shows the start number of the red (right) course. Additional it shows the position of switch (1) and the condition of the competitor (no identification = not started, "u" = used or started, r = run time, t = total time (only in the 2nd heat)).

Info-Display (6):
The info-display shows the actual start numbers and the times. After the racer finish their race it shows as well the difference time.

```
0001 b          0:00.000
0002 r          0:00.000
```

before the start:
StNo, course (b = blue, r= red), time

```
0001 b          0:03
0002 r          0:03
```

after the start:
StNo, course (b = blue, r= red),running time

```
0001 b RT       0:44.206
0002 r RT       0:44.160  -0.046
```
After the finish (1st heat):
StNo, course, RT, run time, difference time

```
0002 b          0:00.000  -0.046
0001 r          0:00.000
```
Before the start of the 2nd heat:
StNo, course , time, addvantage from run 1

```
0002 b RT       0:44.298  -0.025
0001 r RT       0:44.323
```
After the finsih (2nd heat):
StNo, course, RT, run time•, difference time run

```
0002 b TT       1:28.458  -0.071
0001 r TT       1:28.529
```
After the finish (2nd heat):
StNo, course, TT, Totaltime, difference time total

You can switch with <F4> between run time and total time in the 2nd heat after a racer reached the finish and the end of the display time.

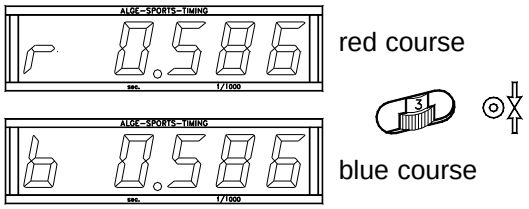
Printer: Printing examples
1st heat:

```
0002rST  10:00:00.121
     FT  10:00:44.281
     RT      0:44.160
0001bST  10:00:00.121
     FT  10:00:44.327
     RT      0:44.206
0002rDTR      - 0.046
```
start time, red course, StNo 2
finish time, red course, StNo2
run time, red course, StNo2
start time, blue course, StNo1
finish time, blue course, StNo1
run time, blue course, StNo1
difference time of the run, advantage of red course (StNo. 2)

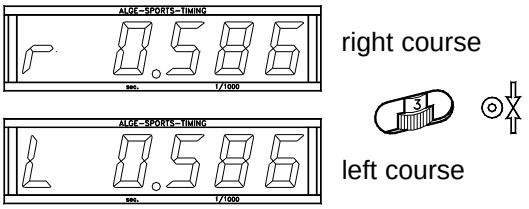
2nd heat:

```
0002bST  10:30:10.001
     FT  10:30:54.299
     RT      0:44.298
     MT      0:44.160
     TT      1:28.458
0001rST  10:30:10.001
     FT  10:30:54.334
     RT      0:44.323
     MT      0:44.206
     TT      1:28.529
0002bDTR      - 0.025
0002bDTT      - 0.071
```
start time, blue course, StNo 2
finish time, blue course, StNo2
run time, blue course, StNo2
memory time, blue course, StNo 2
total time, blue course, StNo 2
start time, red course, StNo1
finish time, red course, StNo1
run time, red course, StNo1
memory time, red course, StNo 1
total time, red course, StNo 1
difference time of the run, advantage of blue course (StNo 2)
total difference time, advantage of blue course (StNo 2)

Display Board GAZ4:
Difference Time (Run and Total):
It shows the course identification b (= blue or L = left) or r (= red or right) on the first digit of a six digit ALGE display board. Then it shows the time in 1/1000 of seconds.
The course identification you can set in menu 26.

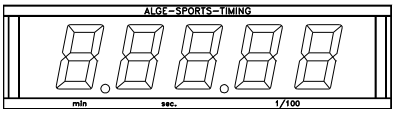


Menu 26: ID channel 4 = b



Menu 26: ID Channel 4 = L

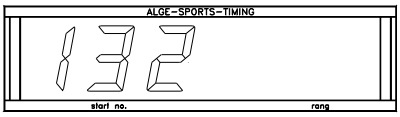
Runtime / Totaltime:
Each course needs a separate display board. Each board shows the time in minutes, seconds, and 1/100 seconds.



red (right) course

blue (left) course

Start Number:
Each course needs a separate display board. It shows the start number on three digits.



red (right) course

blue (left) course

RS 232c Interface (23):

Transfer Format:
1 Start Bit, 8 Data-Bit, no Parity-Bit, 1 Stop Bit
Transfer Speed:
9.600 Baud pre adjusted (adjustable: 2400, 4800, 9600)
Transfer Protocol: ASCII

`xNNNNiCCxxHH:MM:SS.zhtqx##(CR)` Parallelslalom, Intermediate Time or Finish Time
`xNNNNiRTxxHH:MM:SS.zhtqx##(CR)` Parallelslalom, Run Time
`xNNNNiDTRxHH:MM:SS.zhtxx##(CR)` Parallelslalom, Diffference Time of Run
`xNNNNiTTxxHH:MM:SS.zhtqx##(CR)` Parallelslalom, Total Time
`xNNNNiDTTxHH:MM:SS.zhtxx##(CR)` Parallelslalom, Total Difference Time
`pNNNNiCCxxHH:MM:SS.zhtqx##(CR)` Parallelslalom, Finish Time calculated form Penalty Time
`pNNNNiRTxxHH:MM:SS.zhtqx##(CR)` Parallelslalom, Run Time calculated form Penalty Time
`pNNNNiTTxxHH:MM:SS.zhtqx##(CR)` Parallelslalom, Total Time calculated form Penalty Time

x ..... blank
NNNN ..... start nummer (4-digit)
i ..... r (= red/right), b (= blue) or l (left) course
CC ..... timing channel
RT ..... run time
DTR ..... difference time of run
DTT ..... total difference time
HH:MM:SS.zht ..... time in hours, minutes, seconds, and 1/1000 seconds
HH:MM:SS:zhtq ..... time in hours, minutes, seconds, and 1/10.000 seconds
..... countinuos number for each lap
(CR) ..... Carriage Return

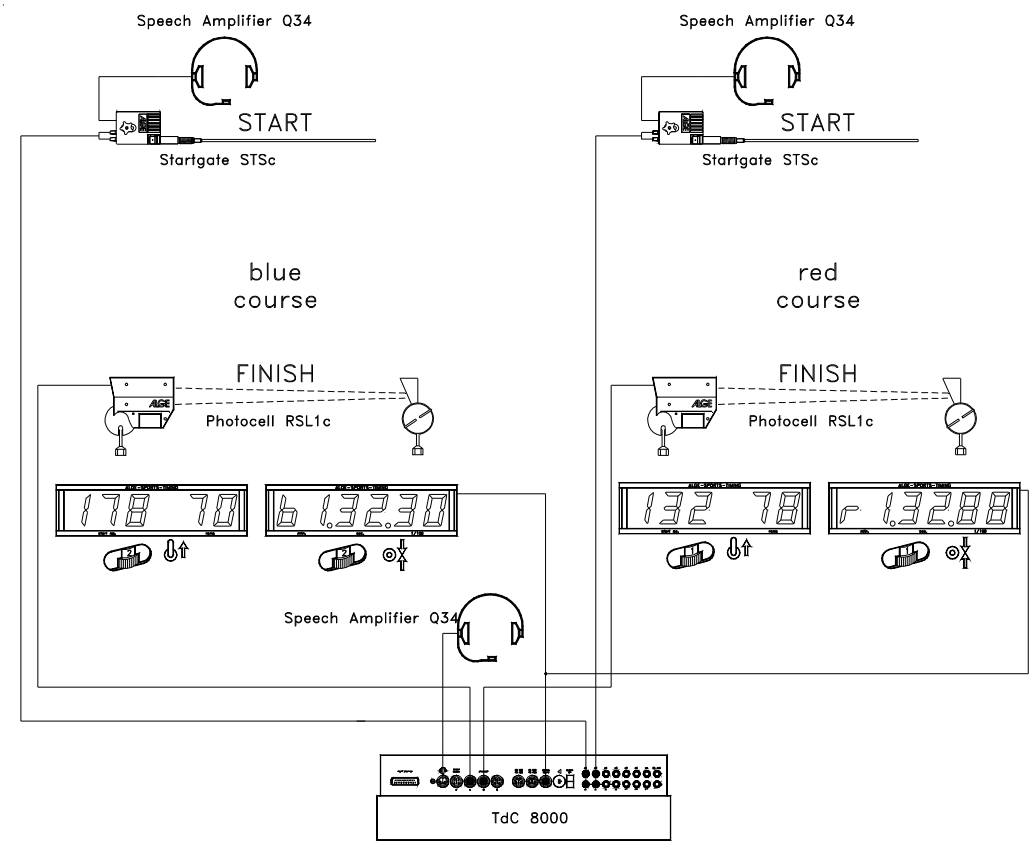
The following characters could be the first digit:
? ..... time without valid start number
c ..... cleared time (with <CLEAR>
p ..... calculated time from Penalty Time

RS 485 Interface: no function

6.5. Dual Timer — Program 6

Net timing with intermediate times on two courses. Each slope can have one racer on course. You can select between a common or separate start impulse for both courses.

This porgram works only for one heat.



Adjustment:

- Switch TdC 8000 on (switch 26)
- Select program DUAL TIMER with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Select precision (e.g. <F3> for 1/100 pecision)
- Press <ENTER>
- Press <YES> if you want to input groups for the race, otherwise <NO> or <ENTER>
  - if you input the groups input always the last start number within a group
  - confirm each start number with <ENTER>
  - after the start number of the last group you must press <ENTER> twice
- Synchronize the TdC 8000 (with time of day and other timing devices)
  - Press <F1> if the finish display (7) shows the correct time of day
    - Wait until TdC gives at the next full minute the synchronize signal to external devices
    - The TdC 8000 is now ready for timing
  - Press <F2> if the finish display (7) shows the wrong time of day
    - Input the time of day with the finish keyboard (15), and confirm it with <ENTER>
    - Start the clock with a start signal (channel 0 or press <START> key)
    - The TdC 8000 is now ready for timing

Race operation:
- Switch (1)has no function.
- Input start number for the blue (left) course with keyboard (9), e.g. StNo. 1.
- Press <ENTER>.
- Display (2) must show the start number (and group) of the blue (left) course.
- Input start number for the red (right) course with keyboard (15), e.g. StNo. 2.
- Press <ENTER>.
- Display (8) must show the start number (and group) of the red (right) course.
- The Info-Display (6) shows the start number and time of the blue (left) and red (right) course.
- If you press <ALT> and <MENU> together, you can select in Menu 28, if the start is separate for both courses, or if you have only one start impulse to start both courses (e.g. Menu 28: Start Channel = separate).
- Start impulse for start number 1.
- Start impulse for start number 2.
- The info-display (6) shows the start number and running time of both courses.
- Finish impulse for start number 1.
- Finish impulse for start number 2.
- The info-display (6) shows the start number and run time of the blue (left) and red (right) course.
- You can input the start numbers of the next competitors as before.
- etc.

Clear Finish Times:
By pressing <CLEAR> of keyboard (9) it clears the finish impulse of the blue (left) course. If you press <ALT> and <CLEAR> together it gives you the cleared time back.
By pressing <CLEAR> of keyboard (15) it clears the finish impulse of the red (right) course. If you press <ALT> and <CLEAR> together it gives you the cleared time back.

Block Finish Times:
You can block the finish time of each course separate.
If you press <BLOCK> of keyboard (9) it prints the finish time (c1) of the blue (left) course as a not valid time with a question-mark (?).
If you press <BLOCK> of keyboard (15) it prints the finish time (c4) of the red (right) course as a not valid time with a question-mark (?).
If you press <ALT> and <BLOCK> together, it will not take the finish impulse of the course at all.

Changing Times:
You can copy a time from one start number to another, you can make a not valid time valid, or you can input a manual time. With the <INPUT> key of the keyboard (9) you change times of the blue course, with the <INPUT> key of the keyboard (15) you change times of the red course.
- Change the finish times with <INPUT>.
- Change the start times with <ALT> and <INPUT>.
- Change the run times and intermediate times with <MENU> and <INPUT>.

Classement:
You can print a classement for both courses together, or only for the blue (left) or red (right) course.

Ranking:
You can make the ranking for both courses together or separate. The adjustment for that features

are in the main menu (menu 29: rank calculation).

Start Channel:
You can use one start channel (c1 or c3) for both courses together (parallel start) or separate c1 for the red (right) course and c3 for the blue (left) course. The adjustment for that features are in the main menu (menu 28: start channel).

Course Identification:
You can select if you want as course identification r (= red) and b (= blue) or r (= right) and l (= left). The adjustment for that features are in the main menu (menu 27: ID channel).

Timing Channels:

c0 = Start channel red (right)
c1 = Finish channel red (right)
c2 = Intermediate channel 1 red (right)
c3 = Start channel blue (left)
c4 = Finish channel blue (left)
c5 = Intermediate channel 1 blue (left)
c2 = Intermediate channel 2 red (right)
c7 = Intermediate channel 2 blue (left)
c2 = Intermediate channel 3 red (right)
c9 = Intermediate channel 3 blue (left)

ALGE adjustment for the main menu:

Menu 1:	Delay Time Start	=	1.00 s
Menu 2:	Delay Time Finish	=	0.30 s
Menu 3:	Seconds Mode	=	OFF
Menu 4:	Display Time1	=	03 s
Menu 5:	Display Time 2	=	03 s
Menu 6:	Display Thousandth	=	OFF
Menu 8:	Running Time	=	RUN
Menu 9:	Running Tenth	=	OFF
Menu 10:	Intermediate Rank	=	ON
Menu 11:	Finish Rank	=	ON
Menu 13:	Print Start Time	=	OFF
Menu 14:	Print Menus	=	ON
Menu 15:	Print Linefeeds	=	0
Menu 16:	RS-232 Baudrate	=	9600 Bd
Menu 17:	RS-232 Run time	=	OFF
Menu 18:	RS-232 Baud rate	=	2400
Menu 19:	D-Board Channel 2	=	RUNNING
Menu 20:	Beep	=	ON
Menu 21:	Handicap time	=	00:00:00.00
Menu 22:	Groups	=	OFF
Menu 24:	Change Race		
Menu 25:	D-Board-Test		
Menu 26:	ID channel	=	4
Menu 28:	Start Channel	=	SEPARATE
Menu 29:	Rank Calculation	=	SEPARATE

Printer: Printing example

```
0001bST  10:05:58.990
     FT  10:07:20.234
     RT      1:21.24
0002rST  10:07:01.485
     FT  10:08:22.385
     RT      1:20.90
```

start time of blue course
finish time of blue course
run time of blue course
start time of red (right) course
finish time of red (right) course
run time of red (right) course

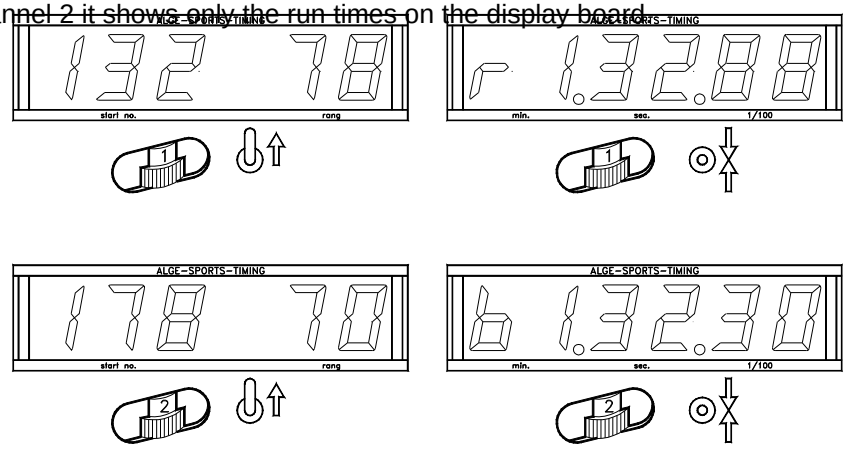
```
0001lST  10:05:58.990
     FT  10:07:20.234
     RT      1:21.24
```

start time of left course (menu 24 set on left)
finish time of left course
run time of left course

Display Board GAZ4:

For each course you need separate display boards. You can show the both net times on display boards as well as start number and rank. You must set code switch of the display boards for the red (right) course on 1, for the blue (left) on 2.

In the main menu (menu 19, see page 56) it is possible to activate display board channel 2 . If you activate channel 2 it shows only the run times on the display board.



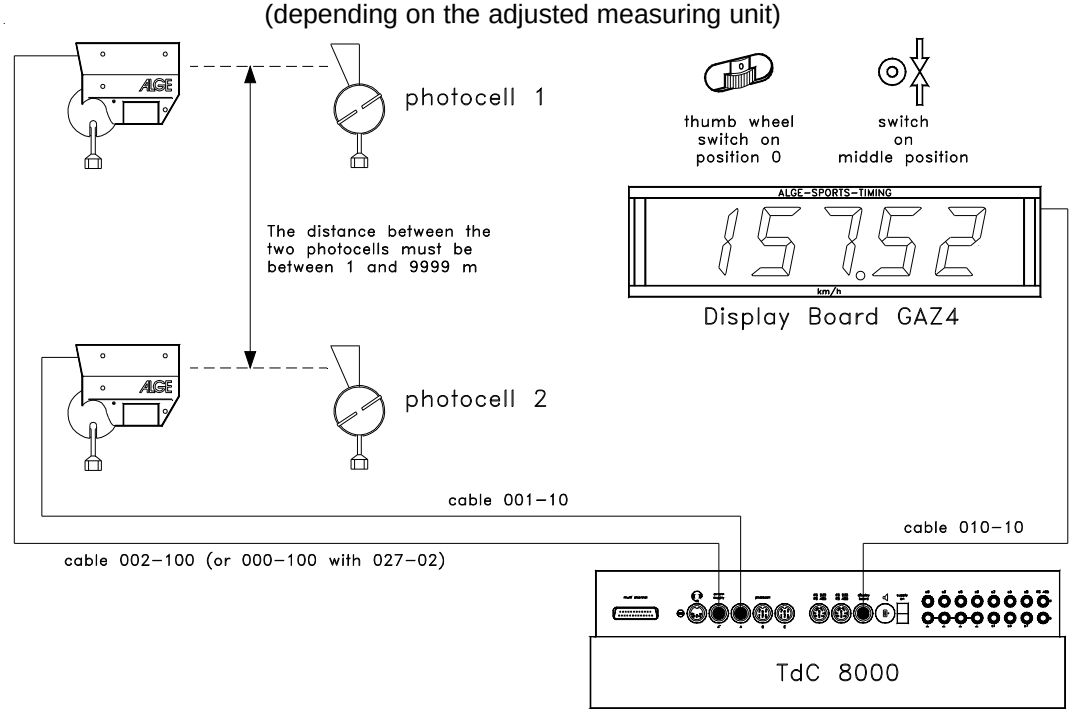
RS 232 Interface:

See page 96, chapter 8.2.

6.6. SPEED — Program 7

You can measure the speed for a selected distance with two photocells (or other impulse devices).

Measuring Unit:	Adjustable in km/h (kilometre per second), m/s (meter pro second), or mph (miles per hour)
Measuring Distance:	Adjustable form 1 to 9999 m (it is always in meter)
Lowest Speed:	Adjustable form 1 to 9999 km/h, m/s, or mph (depending on the adjusted measuring unit)
Highest Speed:	Adjustable form 1 to 9999 km/h, m/s, or mph (depending on the adjusted measuring unit)



Adjustment:

- Switch TdC 8000 on (switch 26)
- Select program 7 "SPEED² with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Press <YES> if you want to input groups for the race, otherwise <NO> or <ENTER>
  - if you input the groups input always the last start number within a group
  - confirm each start number with <ENTER>
  - after the start number of the last group you must press <ENTER> twice

  Synchronize the TdC 8000 (with time of day and other timing devices)
  - press <F1> if the finish display (7) shows the correct time of day
    - wait until TdC 8000 gives at the next full minute the synchronize signal to external devices (you are now ready for timing)
  - press <F2> if the finish display (7) shows the wrong time of day
    - input the time of day, confirm it with <ENTER> and make a start signal (channel 0 or press <START>

Race operation:
- Switch (1) in upper position
- Press together <ALT> and <MENU>
- Go into menu 31 (Distance) to adjust the measuring distance (e.g. 10 m)
- Go into menu 32 (Measuring Unit) to select the measuring unit (km/h, m/s, or mph)
- Go into menu 33 (min. Speed) to adjust the lowest speed that you want to measure
- Go into menu 34 (max. Speed) to adjust the highest speed that you want to measure
- Adjust in menu 4 (Display Time 1) the time that the speed is shown if you use "StNo Automatic"
- Turn in menu 12 (StNo Automatic) the Startnumber Automatic on START or FINISH, if you want to show the speed only for a limited time.
- Input the start number for the first measurement with keyboard (9) or 15 (e.g. #1)
- Press <ENTER>
- The display (2) and (8) must show the correct start number (and group)
- Display (7) shows 000.00 as speed
- The TdC 8000 receives a impulse form channel C0
- Display (2) shows a r next to the start number; the r indicates an impulse form channel C0
- The TdC 8000 receives a impulse form channel C1
- Display (8) shows a r next to the start number; the r indicates an impulse form channel C1
- Display (7) shows the rank and speed
- If you use the Startnumber Automatic it will increase automatically the start number, when the Display Time 1 is over.

Timing Channels:

c0 = speed channel	c2 = no function	c4 =no function	c6 = no function	c8 = no function
c1 = speed channel	c3 = no function	c5 =no function	c7 = no function	c9 = no function

ALGE adjustment for the main menu:

Menu 4: Display Time 1 = 03 s
Menu 11: Finish Rank = ON
Menu 12: STNO Automatic = OFF
Menu 14: Print Menus = ON
Menu 15: Print Linefeeds = 0
Menu 16: RS-232 Baudrate = 9600 Bd
Menu 17: RS-232 Run time = OFF
Menu 18: RS-232 Baud rate = 2400
Menu 20: Beep = ON
Menu 22: Groups = OFF
Menu 24: Change Race
Menu 25: D-Board-Test = OFF
Menu 30: Print Times = OFF
Menu 31: Distance = 100 m
Menu 32: Measuring Unit = km/h
Menu 33: min. Speed = 10 km/h
Menu 34: max. Speed = 200 km/h

Measuring Distance:
You can select the distance of two photocells (or other impulse devices) between 1 and 9999 m. You must input the measuring distance always in Meter, no matter what measuring unit you use. Adjust the measuring distance in menu 31.

Measuring Unit:
You can select from the following measuring units: km/h ..... kilometre per hour
mps ..... meter per second
mph ..... miles per hour
You select the measuring unit in menu 32. If you select a new measuring unit, it changes automatically the minimum and maximum speed to the new unit, and makes the correct speed adjustment.

Printing Times:
Additional to the speed you can print the time If you select in menu 30 "PRINT TIMES" it will print you the time of first impulse, the time of second impulse, and the net time.
Attention: the TdC 8000 measures the time with a precision of 1/10,000 sec., although it prints only the 1/1000th.

Automatic Speed Measurement:
If you select in menu 12 "StNo Automatic" START or FINISH, it will show every measured speed on the display (7) and display board for the adjusted "Display Time 1" (menu 4). When the Display Time is over, it shows on the display (7) zero, and blank on the display board.
If you select menu 12 "StNo Automatic" OFF, it will show every measured speed until the beginning of the next speed measurement.

Printer: Printing example

Menu 30: Print Times = off:

0001 km/h 144.23	first speed measurement
0002 km/h 120.08	second speed measurement

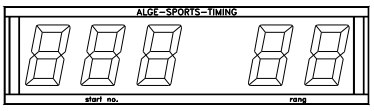
Menu 30: Print Times = on:

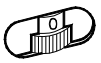
0001 C0 13:49:41.850	1st photocell impulse
0001 C1 13:49:42.100	2st photocell impulse
RT 0:00.249	run time from photocell to photocell
km/h 144.23	first speed measurement
0002 C0 13:59:45.241	1st photocell impulse
0002 C1 13:59:45.541	2st photocell impulse
RT 0:00:195	run time from photocell to photocell
km/h 120.08	second speed measurement

Display Board GAZ4:

You can show the start number and rank, and the speed on different display boards. The display board shows the start number and rank, that is shown in the finish display (8). The display board shows only three digits of start number, and two digits of the rank.

start number / rank:

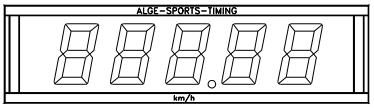


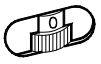


thumb wheel switch on 0

toggle switch upper position

speed:





thumb wheel switch on 0

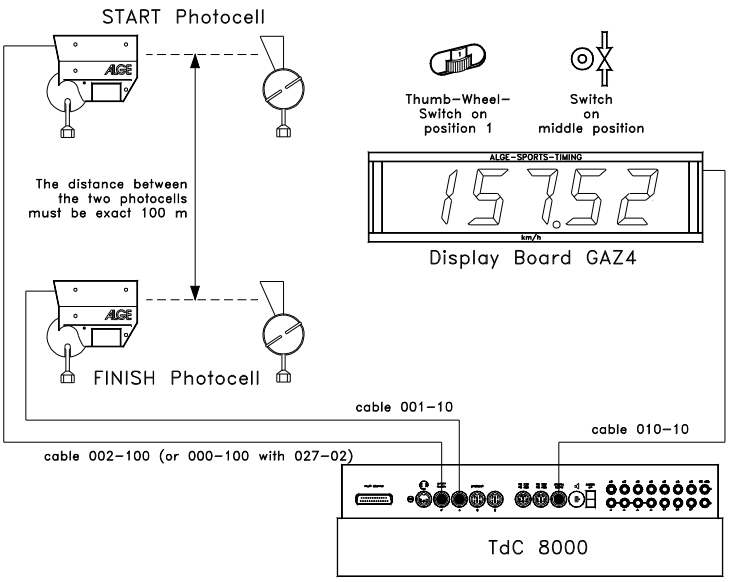
toggle switch middle position

RS 232 interface: see on page 96, chapter 8.2

6.7. SPEED SKIING — Program 8

The Speed Skiing program measures the time and speed for skiers passing two photo-cells set up in a distance of 100 m. The Speed Skiing program works only for one heat.

Measuring Distance: 100 m (fix adjustment)
Speed: km/h (fix adjustment)
Timing Channels: C0 Start Channel
C1 Finish Channel



Adjustment:

- Switch TdC 8000 on (switch 26)
- Select program SPEED SKIING with cursor key (↓ and ↑)
- Press <ENTER>
- Select race that you want to use and clear memory (e.g. <F1> for race 1)
- Press <ENTER>
- Select race (e.g. <F1> for race 1)
- Press <ENTER>
- Press <YES> if you want to input groups for the race, otherwise <NO> or <ENTER>
  - if you input the groups input always the last start number within a group
  - confirm each start number with <ENTER>
  - after the start number of the last group you must press <ENTER> twice

  Synchronize the TdC 8000 (with time of day and other timing devices)
  - press <F1> if the finish display (7) shows the correct time of day
    - wait until TdC 8000 gives at the next full minute the synchronize signal to external devices (you are now ready for timing)
  - press <F2> if the finish display (7) shows the wrong time of day
    - input the time of day, confirm it with <ENTER> and make a start signal (channel 0 or press <START>

Race operation:

- Switch (1) in upper position
- Press together <ALT> and <MENU>
- Go into Menu 12 (Start Number Automatic) and select START
- Input the start number for the start with start keyboard (9) (#1)
- Press <ENTER>
- The start-display (2) must show the correct start number (and group)
- Start number 1 starts
- Display (7) shows the running time, display (8) the start number 1
- The start display (2) changes automatically to the next free start number 2
- When the competitor crosses the finish photocell it shows the run time in display (7), and prints the time of days, run time, and speed.
- Start number 2 starts
- Display (7) shows the running time, display (8) the start number 2
- The start display (2) changes automatically to the next free start number 3
- When the competitor crosses the finish photocell it shows the run time in display (7), and prints the time of days, run time, and speed.
- etc.

Timing Channels:

c0 = start channel	c2 = no function	c4 =no function	c6 = no function	c8 = no function
c1 = finish channel	c3 = no function	c5 =no function	c7 = no function	c9 = no function

ALGE adjustment for the main menu:

Menu 1: Delay Time Start = 1.00 s
Menu 2: Delay Time Finish = 0.30 s
Menu 3: Seconds Mode = OFF
Menu 4: Display Time 1 = 03 s
Menu 6: Display Thousandth = OFF
Menu 7: Info-Display = START
Menu 9: Running Tenth = OFF
Menu 11: Finish Rank = ON
Menu 12: STNO Automatic = OFF
Menu 13: Print Start Time = OFF
Menu 14: Print Menus = ON
Menu 15: Print Linefeeds = 0
Menu 16: RS-232 Baudrate = 9600 Bd
Menu 17: RS-232 Run time = OFF
Menu 18: RS-232 Baud rate = 2400
Menu 19: D-Board Channel 2 = RUNNING
Menu 20: Beep = ON
Menu 22: Groups = OFF
Menu 24: Change Race
Menu 25: D-Board-Test

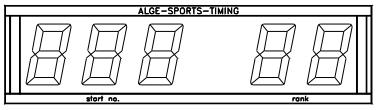
Printer: Printing example

0001	ST 11:47:59.996	Start Time (photocell 1)
	FT 11:48:02.077	Finish Time (photocell 2)
	RT 0:02.081	Run Time
	SP km/h 172.99	Speed in km/h
0002	ST 11:48:07.101	Start Time (photocell 1)
	FT 11:48:09.266	Finish Time (photocell 2)
	RT 0:02.165	Run Time
	SP km/h 166.28	Speed in km/h

Display Board GAZ4:

You can show the net time (running time), the start number and rank, and the speed on different display boards. The display board shows always the start number that is shown in the finish display (8) (on the display board you can show the start number only with three digit and the rank with two digit).
In the main menu (menu 19, see page 56) it is possible to activate display board channel 2 . If you activate channel 2 it shows only the run times on the display board.

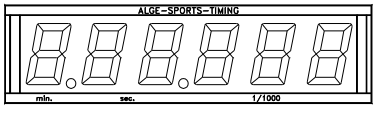
start number / rank:



thumb wheel switch on 0

toggle switch upper position

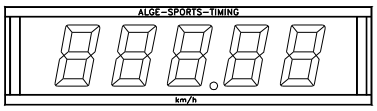
time:



thumb wheel switch on 0

toggle switch middle position

speed:



thumb wheel switch on 1

toggle switch middle position

RS 232 interface: see on page 96, chapter 8.2

6.8. TdC TEST: Program 3

Test program for TdC 8000. It is possible to make measurements of the device, as well as tests with the displays and keyboard. This test is used for the producer to check some functions of the TdC 8000 after the production. It has no function for the normal operation.

Starting the TdC Test:

- Switch TdC 8000 on (switch 26)
- Select program TdC TEST with the cursor keys ↓ and ↑
- Press <ENTER>
- The info-display (6) shows:

```
Menu 35: COMMON MEASUREMENTS


Select: YES/NO or menu number: 29
```

- Select program with the cursor keys ↓ and ↑:
  - o Common Measurements ..... Menu 29
  - o Display Test ..... Menu 30
  - o Keyboard Test ..... Menu 31
- Confirm selection with <ENTER>

Common Measurements: Menu 35

If you select the common measurements the info-display (6) shows the following:

```
Menu 36: COMMON MEASUREMENTS     BATT    F1
  UB= 8.5V IB=+0.00A TB=+23.9°    CLOCK  F2
  UE= 5.0V IE=+0.00A TL=-69.5°  PRINTER  F3
Continue: ENTER                 SPEAKER  F4
```

<F1> checking battery
<F2> clock of RS-485
<F3> printer test
<F4> speaker test

The info-display (6) shows in the second line the battery voltage (UB), the battery current (IB), and the battery temperature (TB).
The third line shows the stabilized external voltage (UE) which should be about 5 V, the current output IE for extender devices, which must be below 1 A, and the TL measurement. The TL measurement is not activated yet and can show any figure.

Press <F1> to check the battery:

The second line of the info-display shows the battery voltage (UB), the battery current (IB), and the battery temperature (TB).

- Press <F1> until the info-display (6) shows at the right upper corner BATT L<. This means that it loads now the battery, if you have the charging device NLG8 connected. The battery current IB must show now a amount of about +2 A.
- Press <F1> until the info-display (6) shows at the upper corner BATT E<. This means that it unloads now the battery. The battery current must have now a value of about -1,6 A.

You can check the CLOCK impulse for the RS-485 interface if you press <F2>. Therefore you need an oscillograph.

If you press <F3> it prints all characters of the printer.
If you press <F4> the external speaker will honk.

Display Test: **Menu 36**

If you select the display test the info-display (6) shows the following:

Menu 37: DISPLAY TEST	DISPLAY 1	F1	<F1>: check of display (2)
	DISPLAY 2	F2	<F2>: check of display (7)
	DISPLAY 3	F3	<F3>: check of display (8)
Continue: ENTER	DISPLAY 4	F4	<F4>: check of display (6)

To check the numeric display (2, 7, 8) press <F1>, <F2>, and <F3>:
- if you press the <F>-key the first time it writes segment by segment of the display.
- if you press the <F>-key again it shows all segments
- if you press the <F>-key again it makes the display blank.

To check the alphanumeric info-display (6) press <F4>:
- if you press <F4> it shows the display blank
- if you press <F4> again it shows all dots of the display
- if you press <F4> again it shows again Menu 2

Keyboard Test: **Menu 37**

If you select the keyboard test the info-display (6) shows the following:

```
Menu 38: KEYBOARD TEST
  U  SCB 123  YFU TFC  SCB 123
  M  789 I0E  NFD MAM  789 I0E
  D  456      PE*      456
```

You can check all keys. If you press a key it disappears on the display. If you press the keyboard in the right order the cursor jumps form key to key. Start with the switch (1) in upper, middle, and down position, then the start keyboard (9) from the left upper key to the right until you reached the right bottom key. Afterwards do the same test with the function keyboard (14) and the finish keyboard (15).

Leave the keyboard test by pressing <ALT> and <ENTER> (finish keyboard 15) at the same time.

Channel Test: **Menu 38**
to test the channels

Interface Test: **Menu 39**
to test the interface

RAM Test: **Menu 40**
to test the RAM

RTC Test: **Menu 41**
to test the real time clock

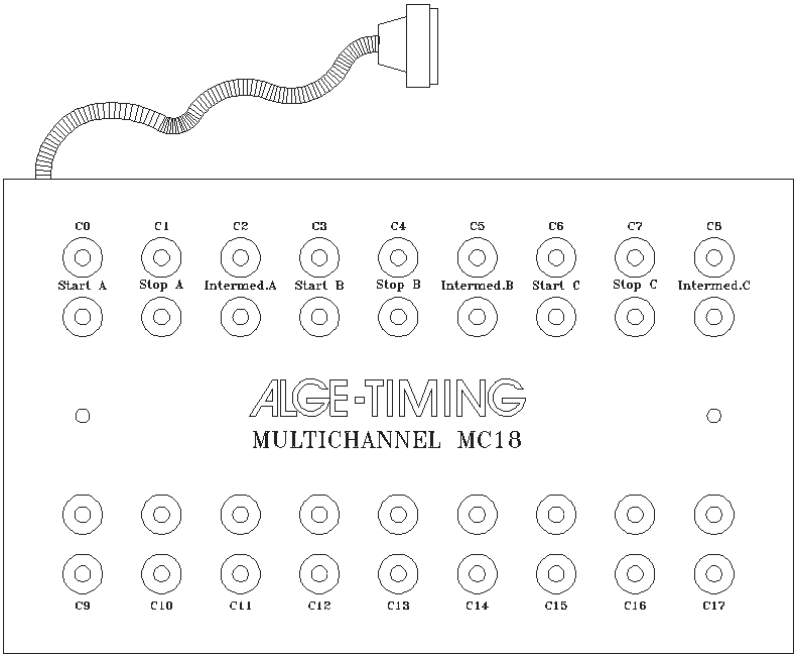
Low Voltage Test: **Menu 42**
to test the low voltage barriers for power down

Exit the TdC TEST by switching the device off.

7. DESCRIPTION OF ADDITIONAL DEVICES

7.1. Multi Channel MC18:

You can use the MC18 if you want to connect many channels. The MC18 has all 10 TdC 8000 channels on banana sockets (c0 to c9). For the TdC 8000 is channel c10 to c17 not active. Connect the MC18 at the TdC socket "multi channel" (16).



8.2. Opto Channel OC18:

Use the OC18 if you need potential free contacts. The OC18 prevents the TdC 8000 from damage through high voltage coming through the impulse cables.

The OC18 has all 10 TdC 8000 channels on banana sockets (channel c0 to c9). Channel c10 to c17 is not activated. Connect the OC18 at the socket "multi channel" (16) of the TdC 8000.

The Opto Channel OC18 has a 9 V battery built in. To change the battery you have to unscrew the cover.

8. TECHNICAL DATA

Measuring range: 23 hours, 59 minutes, 59,9999 seconds

Crystal frequency: TCXO 11.520 MHz (Temperature Compensated Crystal Oscillator)

Accuracy:

at changeable temperature range from -25 to +50°C:	+/- 2,5 ppm at (+/- 0,009 s/h.)
Aging:	+/- 1 ppm per year
Frequency adjustment:	+/- 0,1 ppm at 25°C

Temperature Operative Timing Range:: -25 to 50°C

Memory: about 2 x 8.600 times with start numbers;
keeps data when switched off through internal rechargeable battery

Display:

start display (2):	numeric liquid crystal display, 8 digits, figure height 12.7 mm,
finish display (7):	numeric liquid crystal display, 8 digits, figure height 12.7 mm,
finish display (8):	numeric liquid crystal display, 8 digits, figure height 12.7 mm,
info-display (6):	alphanumeric liquid crystal display 4 x 40 characters, figure height 4.8 mm

Operating elements: On-/Off-switch (26)
Turn over switch (1)
Start Keyboard (9)
Function Keyboard (14)
Finish Keyboard (15)

Electronic: most advanced C-MOS technology with 80C166 microprocessor

Power supply:

internal:	NiCd rechargeable battery 7.2 V / 4.5 A
external:	210 to 240 VAC with Net-Charging-Device NLG8

Power consumption: without external devices from the internal NiCd battery: about 80 mA

when printing: about 500 mA

Charging supply: +11 to 16 VDC (Pin 4 from socket 19, 20, 21 and 22)

Impulse length: Input resistance 10 kΩ against +5V
Triggering with < 1V (falling flank)
Hysteresis about 2V

Output 5VDC stabilized: total max. of 120 mA

Loudspeaker output: for 8 Ω speaker, U_{max}= 24 V_{pp}

Casing: case with key to lock, top you can take away

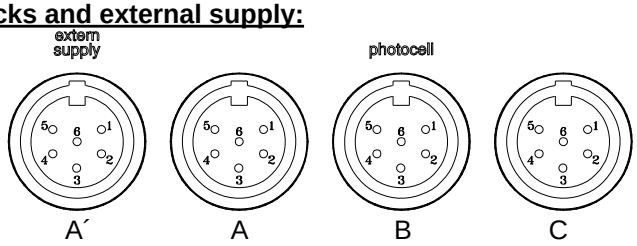
front panel of aluminium

Dimensions: 450 x 320 x 150 mm

Weight: 7.5 kg

8.1. Connection System:

8.1.1. Photocell jacks and external supply:

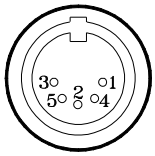


Jack A and A´ (20 and 19):
1 input channel 0 (start)
2 input channel 1 (stop)
3 common ground
4 input external supply (6 to 15 VDC)
5 output +5 VDC stabilized
6 input channel 2 (intermediate time)

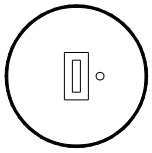
Jack B (21):
1 input channel 3 (start)
2 input channel 4 (stop)
3 common ground
4 input external supply (6 to 15 VDC)
5 output +5 VDC stabilized
6 input channel 5 (intermediate time)

Jack C (22):
1 input channel 6 (start)
2 input channel 7 (stop)
3 common ground
4 input external supply (6 to 15 VDC)
5 output +5 VDC stabilized
6 input channel 8 (intermediate time)

8.1.2. Headset Jack (18):

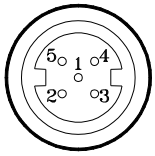


1 microphone of headset
2 common ground
3 loud speaker of headset
4 common ground
5 input channel 9



8.1.3. Speaker Jack (25):

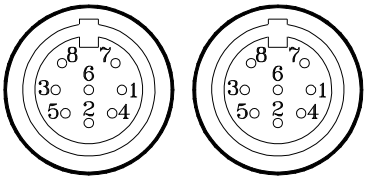
1 speaker signal
2 common ground



8.1.4. Display Board Jack (24):

1 common ground
2 output supply (6 to 15 VDC)
3 output data channel 1
4 output supply (6 to 15 VDC)
5 output data channel 1 or 2

8.1.5. RS 232 / RS 485 (23):

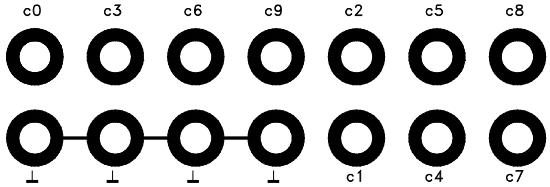


1 RS 232, Data TXD (transmit)
2 RS 232, common ground
3 RS 232, Data RXD (receive)
4 RS 232, CTS
5 RS 232, RTS
6 RS 485, line a
7 RS 232, output external supply (6 to 15 VDC)
8 RS 485, line b

8.1.6. Display Board (28):

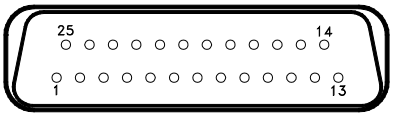
Display board interface with data output channel 2 (yellow (or withe) banana socket) and ground (black (or blue) banana socekt).

8.1.7. Banana Socket for Channel 0 to 9 (27):



All channels you can connect on the banana sockets. For all 9 channel you have four ground connections.

8.1.8. Multi Channel (16):



1 channel 9
2 channel 0 (start)
3 channel 2
4 channel 3
5 channel 7
6 data output (like channel 2 from "display board" (24)
7 RS 485 B
8 RS 485 A
9 Clock A
10 Clock B
11 empty
12 common ground
13 output +5 VDC stabilized
14 channel 1
15 channel 5
16 channel 8
17 channel 6
18 channel 4
19 empty
20 empty
21 empty
22 empty
23 output external supply (5.3 to 14.3 VDC)
24 common ground
25 external supply (+6 to 15 VDC)

8.2. RS 232 Interface (16, 23):

Transfer Format: 1 start bit, 8 data bit, no parity bit, 1 stop bit
Transfer Speed: 9.600 Baud pre adjusted (adjustable: 2400, 4800)
Transfer Protocol: ASCII

`xNNNNxCCxxHH:MM:SS.zhtqxGR(CR)`	time from C0 to C9
`xNNNNxCCMxHH:MM:SS.zhtqxGR(CR)`	manual time from <START> or <STOP> button
`xNNNNxRTxxHH:MM:SS.zhtxxGR(CR)`	run time
`xNNNNxTTxxHH:MM:SS.zhtxxGR(CR)`	total time
`xNNNNxSQxxHH:MM:SS.zhtxxGR(CR)`	sequential time (lap time)
`xNNNNICCxxHH:MM:SS.zhtxxGR(CR)`	Dual Timer, times form C0 to C9
`xNNNNIRTxxHH:MM:SS.zhtxxGR(CR)`	Dual Timer, run time
`xNNNNiCCxxHH:MM:SS.zhtqx##(CR)`	Parallelslalom, Intermediate Time or Finish Time
`xNNNNiRTxxHH:MM:SS.zhtqx##(CR)`	Parallelslalom, Run Time
`xNNNNiDTRxHH:MM:SS.zhtxx##(CR)`	Parallelslalom, Diffference Time of Run
`xNNNNiTTxxHH:MM:SS.zhtqx##(CR)`	Parallelslalom, Total Time
`xNNNNiDTTxHH:MM:SS.zhtxx##(CR)`	Parallelslalom, Total Difference Time
`pNNNNiCCxxHH:MM:SS.zhtqx##(CR)`	Parallelslalom, Finish Time calculated form Penalty Time
`pNNNNiRTxxHH:MM:SS.zhtqx##(CR)`	Parallelslalom, Run Time calculated form Penalty Time
`pNNNNiTTxxHH:MM:SS.zhtqx##(CR)`	Parallelslalom, Total Time calculated form Penalty Time
`xNNNNxkmhxxxxssssss.ssxxxGR(CR)`	speed measurement
`xNNNNxkmhxxxxssssss.ssxxxxx(CR)`	speed measurement for speed skiing
`?NNNNxCCxxHH:MM:SS.zhtqxGR(CR)`	illegal time
`m0000xCCxxHH:MM:SS.zhtqxGR(CR)`	times stopped with <MEMO>
`cNNNNxCCxxHH:MM:SS.zhtqxGR(CR)`	cleared time
`dNNNNxCCxxHH:MM:SS.zhtqxGR(CR)`	disqualified time
`iNNNNxCCxxHH:MM:SS.zhtxxGR(CR)`	manipulated time (<INPUT>)
`xxxxxxC0xxHH:MM:SS.zhtqxGR(CR)`	start time after a group start
`nNNNN(CR)`	new start number shown in finish display (8)

x ..... blank
NNNN ..... start number (four digits)
0000 ..... start number 0 for times stopped with <MEMO>
i ..... Identification of the course; r (= red/right), b (= blue) or l (left) course
CC ..... timing channels (c0 to c9)
CCM ..... manual impulse (with <START> or <STOP> from keyboard 9 or 15)

C0	..... channel 0 (start)	C5	..... channel 5
C1	..... channel 1 (finish)	C6	..... channel 6
C2	..... channel 2	C7	..... channel 7
C3	..... channel 3	C8	..... channel 8
C4	..... channel 4	C9	..... channel 9

RT ..... run Time
TT ..... total Time
SQ ..... sequential Time (lap time)
DTR ..... difference time of run
DTT ..... total difference time
kmh ..... speed (possible output depending on unit used: kmh, mps, mph)
HH:MM:SS.zht ..... time in hours, minutes, seconds, and 1/1000 seconds
HH:MM:SS.zhtq ..... time in hours, minutes, seconds, and 1/10000 seconds
sssss.ss ..... speed for 0.00 up to 99999.99 measured in km/h in speed skiing
GR ..... group (from 01 to 99, no input for groups = 00)
..... countinuos number for each lap
(CR) ..... Carriage Return

The following characters could be the first digit:
x ..... blank
? ..... time without valid start number
m ..... time from memo (memory)
c ..... cleared time (with <CLEAR>)
d ..... times cleared through disqualification
i ..... times input manual: <INPUT>
n ..... new start number shown in finish display (8)
p ..... calculated time from Penalty Time

Pin arrangement: see page 95

Cable form TdC 8000 to PC (9-Pin): 067-02
Cable form TdC 8000 to PC (25-Pin): 066-03

In the main menu you can adjust the following:

RS 232 Baudrate: **Menu 15: RS-232 BAUDRATE = 9600 Bd**

You can adjust the baud rate of the RS 232 interface (23) between 2400, 4800, or 9600 baud.

Pre adjusted value: 9600 Baud

RS 232 Run Time: **Menu 16: RS-232 RUN TIME = OFF**

The RS 232 interface (23) outputs always in the difference-timing mode the time of day. Additional you can output the run time.
output time of day and run time = <F1>
output time of day = <F2>

Pre adjusted value: RS-232 output is time of day

8.2.1. Checking the TdC 8000 adjustments through the RS 232 interface:

You can check the following adjustments through the RS 232 interface:

Precision:

RS232 question:	PRE=?	
TdC 8000 answer:	PRE = 1 s	precision is 1 second
	PRE = 1/10 s	precision is 1/10 seconds
	PRE = 1/100 s	precision is 1/100 seconds
	PRE = 1/1000 s	precision is 1/1000 seconds

Timing Mode:

RS232 question:	TI=?	
TdC 8000 answer:	TI = DIFFERENC	difference timing
	TI = ABSOLUT	absolute timing

Laps for the Split-Sequential program:
RS232 question: LAPS = ?
TdC 8000 answer: LAPS = 4 Adjusted amount of laps (1 to 99)

8.2.2. Adjustment of the Main Menu through the RS 232 interface:

You can adjust the main menu direct from a PC through the RS 232 interface.

Delay Time Start: Menu 1
RS232 question: DTS?
RS232 order: DTS=0.30
Adjustable: 0,00 to 9,99 seconds

Delay Time Finish: Menu 2
RS232 question: DTF?
RS232 order: DTS=0.30
Adjustable: 0,00 to 9,99 seconds

Seconds Mode: Menu 3
RS232 question: SM?
RS232 order: SM=ON
Adjustable: ON or OFF

Display Time 1: Menu 4
RS232 question: DIT1?
RS232 order: DIT1=03
Adjustable: 0 to 99 seconds

Display Time 2: Menu 5
RS232 question: DIT2?
RS232 order: DIT2=03
Adjustable: 0 to 99 seconds

Display Thousandth: Menu 6
RS232 question: DI1/1000?
RS232 order: DI1/1000=ON
Adjustable: ON or OFF

Info-Display: Menu 7
RS232 question: IDIS?
RS232 order: IDIS=START
Adjustable: START, FINISH, or OFF

Running Time: Menu 8
RS232 question: RT?
RS232 order: RT=RUN
Adjustable: RUN or Total

Running Tenth: Menu 9
RS232 question: R1/10?
RS232 order: R1/10=OFF
Adjustable: ON or OFF

Intermediate Rank: Menu 10
RS232 question: RNKIT?
RS232 order: RNKIT=ON
Adjustable: ON or OFF

Finish Rank: Menu 11
RS232 question: RNKFT?
RS232 order: RNKFT=ON
Adjustable: ON or OFF

Start Number Automatic: Menu 12
RS232 question: STNOA?
RS232 order: STNOA=OFF
Adjustable: OFF, START, or FINISH

Print Start Time: Menu 13
RS232 question: PST?
RS232 order: PST=OFF
Adjustable: ON or OFF

Print Menus: Menu 14
RS232 question: PM?
RS232 order: PM=ON
Adjustable: ON or OFF

Print Linefeed: Menu 15
RS232 question: PLF?
RS232 order: PLF=ON
Adjustable: ON or OFF

RS 232 Baudrate: Menu 16
RS232 question: BDRS?
RS232 order: BDRS=9600
Adjustable: 2400, 4800, or 9600 Bd

RS 232 Run Time: Menu 17
RS232 question: RSRT?
RS232 order: RSRT=OFF
Adjustable: ON or OFF

Display Board Baud Rate: Menu 18
RS232 question: BDDB?
RS232 order: RTRS=OFF
Adjustable: ON or OFF

Display Board Channel 2: **Menu 19**
RS232 question: DBC2?
RS232 order: DBC2=RUNNING
Adjustable: RUNNING or STANDING

Beep: **Menu 20**
RS232 question: BEEP?
RS232 order: BEEP=ON
Adjustable: ON or OFF

Handicap Time: **Menu 21**
RS232 question: HT?
RS232 order: HT=00:01:12.34
Adjustable: time in 1/100 seconds
Handicap off: HT=00:00:00.000

Input of Groups: **Menu 22**
RS232 question: not possible
RS232 order: not possible

Change Run: **Menu 23**
RS232 question: not possible
RS232 order: not possible

Change Race: **Menu 24**
RS232 question: not possible
RS232 order: not possible

Display Board Test: **Menu 25**
RS232 question: not possible
RS232 order: not possible

Penalty Time for Parallel Slalom: **Menu 26**
RS232 question: PT?
RS232 order: PT=1.500
Adjustable: seconds and 1/1000 sec.

ID for Channel 4 in Parallel Slalom: **Menu 27**
RS232 question: IDC4?
RS232 order: IDC4=BLUE
Adjustable: B or L (blue or left)

Start Channel for Dual Timer: **Menu 28**
RS232 question: STS?
RS232 order: STS=SEPARATE
Adjustable: SEPARATE or COMMON

Ranking for Dual Timer: **Menu 29**
RS232 question: RNKC?
RS232 order: RNKC=SEPARATE
Adjustable: SEPARATE or COMMON

Printing Times for Speed: **Menu 30**
RS232 question: PRT?
RS232 order: PRT=OFF
Adjustable: OFF or ON

Measuring Distance Speed: **Menu 31**
RS232 question: DST?
RS232 order: DST=0100
Adjustable: 1 to 9999

Measuring Unit for Speed: **Menu 32**
RS232 question: SPU?
RS232 order: SPU=kmh
Adjustable: kmh, m/s or mph

Min. Speed: **Menu 33**
RS232 question: MINSP?
RS232 order: MINSP=0010
Adjustable: 1 to 9999

Max. Speed: **Menu 34**
RS232 question: MAXSP?
RS232 order: MAXSP=0200
Adjustable: 1 to 9999

8.2.3. Call Data through the RS 232 Interface:

Through the RS 232 interface you can call all date of the memory of the TdC 8000 e.g. from a PC. Each command is closed with a Carriage Return (in the following examples it is listed as (CR)).

If you want a classement of intermediate times, you must identify the channel number (C2 to C9).

If you want a "SINGLE" classement, you need to input also the data that you want transferred (e.g. start numbers, start number blocks, groups).

Classement "NOT FINISHED":
NOF(CR) ..... all competitors that did not finished the race

Classement "DISQUALIFIED":
DIS(CR) ..... all disqualified competitors

Classement "START ORDER":
STO(CR) ..... Start order for the 2nd heat (for BIBO)

Classement "ALL:
CALRT(CR) ..... Classement of the run time from all competitors
CAL01RT(CR) .... Classement of all run times of a lap (01 = lap 1)
CAL01SQ(CR) .... Classement of all sequential times of a lap (01 = lap 1)
CALMT(CR) ..... Classement of the memory time from all competitors
CALTT(CR) ..... Classement of the total time from all competitors
CALITC2(CR) .... Classement of the intermediate time C2 from all competitors
CALITC3(CR) .... Classement of the intermediate time C3 from all competitors
CALITC4(CR) .... Classement of the intermediate time C4 from all competitors
CALITC5(CR) .... Classement of the intermediate time C5 from all competitors
CALITC6(CR) .... Classement of the intermediate time C6 from all competitors
CALITC7(CR) .... Classement of the intermediate time C7 from all competitors
CALITC8(CR) .... Classement of the intermediate time C8 from all competitors
CALITC9(CR) .... Classement of the intermediate time C9 from all competitors
CALBRT(CR) ..... Classement of all competitor of the BLUE course for Dual Timer
CALRRT(CR) ..... Classement of all competitor of the RED (right) course for Dual Timer
CALLRT(CR) ..... Classement of all competitor of the left course for Dual Timer

Classement "GROUPS" and "ALL"
CGRALRT(CR) .... Group classement of the run time from all groups
CGRALMT(CR) .... Group classement of the memory time from all groups
CGRALTT(CR) .... Group classement of the total time from all groups
CGRALITC2(CR) .. Group classement of the intermediate time C2 from all groups
CGRALITC3(CR) .. Group classement of the intermediate time C3 from all groups
CGRALITC4(CR) .. Group classement of the intermediate time C4 from all groups
CGRALITC5(CR) .. Group classement of the intermediate time C5 from all groups
CGRALITC6(CR) .. Group classement of the intermediate time C6 from all groups
CGRALITC7(CR) .. Group classement of the intermediate time C7 from all groups
CGRALITC8(CR) .. Group classement of the intermediate time C8 from all groups
CGRALITC9(CR) .. Group classement of the intermediate time C9 from all groups
CGRALLBRT(CR) .. Group classement of the BLUE course for Dual Timer
CGRALLRRT(CR) .. Group classement of the RED (right) course for Dual Timer
CGRALLLRT(CR) .. Group classement of the left course for Dual Timer

Classement "GROUPS" and "SINGLE":
After the instruction for "GROUPS" and "SINGLE" you must input the groups. Input each group with a 2 character number and confirm it with a carriage return. Input after the last group 00 and a carriage return.
CGRSIRT(CR) .... Group classement of the run time from selected groups
CGRSIMT(CR) .... Group classement of the memory time from selected groups
CGRSITT(CR) .... Group classement of the total time from selected groups
CGRSIITC2(CR) .. Group classement of the intermediate time C2 from selected groups
CGRSIITC3(CR) .. Group classement of the intermediate time C3 from selected groups
CGRSIITC4(CR) .. Group classement of the intermediate time C4 from selected groups
CGRSIITC5(CR) .. Group classement of the intermediate time C5 from selected groups
CGRSIITC6(CR) .. Group classement of the intermediate time C6 from selected groups
CGRSIITC7(CR) .. Group classement of the intermediate time C7 from selected groups
CGRSIITC8(CR) .. Group classement of the intermediate time C8 from selected groups
CGRSIITC9(CR) .. Group classement of the intermediate time C9 from selected groups

CGRSILBRT(CR) .. Group classement of the BLUE course for Dual Timer from selected groups
CGRSILRRT(CR) .. Group classement of red (right) course from selected groups (Dual Timer)
CGRSILLRT(CR) .. Group classement of the left course for Dual Timer from selected groups
01(CR) ..... e.g. group 1
04(CR) ..... e.g. group 4
07(CR) ..... e.g. group 7
00(CR) ..... finish with this input

Classement "CLASS":
After the instruction for "CLASSES" input the classes. You can make a class out of different start number blocks. Each start number block has the first and last start number (each four digits) of a continues sequence. Both start numbers are separated by a hyphen. Each number block is separated by a carriage return. Input after the last number block 0000-0000 and carriage return.
CCLRT(CR) ..... Classement of the run time from start number blocks (classes)
CCL01RT(CR) .... Classement of run times of a lap (01=lap) from start number blocks (classes)
CCL01SQ(CR) .... Classement of sequential times of a lap (01 = lap 1) from start number blocks
CCLMT(CR) ..... Classement of the memory time from start number blocks (classes)
CCLTT(CR) ..... Classement of the total time from start number blocks (classes)
CCLITC2(CR) .... Classement of the intermediate time C2 from start number blocks (classes)
CCLITC3(CR) .... Classement of the intermediate time C3 from start number blocks (classes)
CCLITC4(CR) .... Classement of the intermediate time C4 from start number blocks (classes)
CCLITC5(CR) .... Classement of the intermediate time C5 from start number blocks (classes)
CCLITC6(CR) .... Classement of the intermediate time C6 from start number blocks (classes)
CCLITC7(CR) .... Classement of the intermediate time C7 from start number blocks (classes)
CCLITC8(CR) .... Classement of the intermediate time C8 from start number blocks (classes)
CCLITC9(CR) .... Classement of the intermediate time C9 from start number blocks (classes)
CCLBRT(CR) ..... Classement of the run time from blocks (classes) from the blue course (Dual Timer)
CCLRRT(CR) ..... Classement of the run time from blocks (classes) from the red (right) course (Dual Timer)
CCLLRT(CR) ..... Classement of the run time from blocks (classes) from the left course (Dual Timer)
0001-0024(CR) .. Start number block, e.g. form StNo. 1 to StNo. 24
0065-0073(CR) .. Start number block, e.g. form StNo. 65 to StNo. 73
0105-0124(CR) .. Start number block, e.g. form StNo. 105 to StNo. 124
0000-0000(CR) .. Finish with this input

Classement "LEADING TEN":
CFTRT(CR) ..... Classement of the leading ten run times
CFT01RT(CR) .... Classement of the leading ten run times of a lap (01=lap)
CFT01SQ(CR) .... Classement of the leading ten sequential times of a lap (01 = lap 1)
CFTMT(CR) ..... Classement of the leading ten memory times
CFTTT(CR) ..... Classement of the leading ten total times
CFTITC2(CR) .... Classement of the leading ten intermediate times from channel C2
CFTITC3(CR) .... Classement of the leading ten intermediate times from channel C3
CFTITC4(CR) .... Classement of the leading ten intermediate times from channel C4
CFTITC5(CR) .... Classement of the leading ten intermediate times from channel C5
CFTITC6(CR) .... Classement of the leading ten intermediate times from channel C6
CFTITC7(CR) .... Classement of the leading ten intermediate times from channel C7
CFTITC8(CR) .... Classement of the leading ten intermediate times from channel C8
CFTITC9(CR) .... Classement of the leading ten intermediate times from channel C9
CFTBRT(CR) ..... Classement of the leading ten of the BLUE course for Dual Timer
CFTRRT(CR) ..... Classement of the leading ten of the RED (right) course for Dual Timer
CFTLRT(CR) ..... Classement of the leading ten of the left course for Dual Timer

Classement "SINGLE":
After the instruction for "SINGLE" you must input the start numbers. Input each start number with a 4 character number and confirm it with a carriage return. Input after the last number 0000 and a carriage return.

`CSIRT(CR)` ..... Classement of the run time of individual start numbers
`CSI01RT(CR)` .... Classement of the run time of a lap (01=lap) with individual start numbers
`CSI01SQ(CR)` .... Classement of the sequential times of a lap with individual start numbers
`CSIMT(CR)` ..... Classement of the memory time of individual start numbers
`CSITT(CR)` ..... Classement of the total time of individual start numbers
`0001(CR)` ..... input start number
`0005(CR)` ..... input start number
`0012(CR)` ..... input start number
`0000(CR)` ..... finish with this input

Classement "ADD":
After the instruction for "ADD" you must input the start numbers that you want added. Input each start number with a 4 character number and confirm it with a carriage return. Input after the last number 0000 and a carriage return.

`CADRT(CR)` ..... Add run times from competitors
`CAD01RT(CR)` .... Add run times of a lap (01=lap) from competitors
`CAD01SQ(CR)` .... Add sequential times of a lap (01 = lap 1) from competitors
`CADMT(CR)` ..... Add memory times from competitors
`CADTT(CR)` ..... Add total times from competitors
`CADITC2(CR)` .... Add intermediate times from channel C2 from competitors
`CADITC3(CR)` .... Add intermediate times from channel C3 from competitors
`CADITC4(CR)` .... Add intermediate times from channel C4 from competitors
`CADITC5(CR)` .... Add intermediate times from channel C5 from competitors
`CADITC6(CR)` .... Add intermediate times from channel C6 from competitors
`CADITC7(CR)` .... Add intermediate times from channel C7 from competitors
`CADITC8(CR)` .... Add intermediate times from channel C8 from competitors
`CADITC9(CR)` .... Add intermediate times from channel C9 from competitors
`0001(CR)` ..... input start number
`0005(CR)` ..... input start number
`0012(CR)` ..... input start number
`0025(CR)` ..... input start number
`0000(CR)` ..... finish with this input

Classement "PROTOCOL" and "ALL":

`PALST(CR)` ..... Protocol of all start times
`PALFT(CR)` ..... Protocol of all finish times
`PALRT(CR)` ..... Protocol of all run times
`PALSQ(CR)` ..... Protocol of all sequential times (lap times)
`PALMT(CR)` ..... Protocol of all memory times
`PALTT(CR)` ..... Protocol of all total times
`PALITC2(CR)` .... Protocol of all intermediate times of channel C2
`PALITC3(CR)` .... Protocol of all intermediate times of channel C3
`PALITC4(CR)` .... Protocol of all intermediate times of channel C4
`PALITC5(CR)` .... Protocol of all intermediate times of channel C5
`PALITC6(CR)` .... Protocol of all intermediate times of channel C6
`PALITC7(CR)` .... Protocol of all intermediate times of channel C7
`PALITC8(CR)` .... Protocol of all intermediate times of channel C8
`PALITC9(CR)` .... Protocol of all intermediate times of channel C9
`PALBRT(CR)` ..... Protocol of all run times of the blu course for Dual Timer
`PALRRT(CR)` ..... Protocol of all run times of the red (right) course for Dual Timer
`PALLRT(CR)` ..... Protocol of all run times of the left course for Dual Timer

Classement "PROTOCOL" and "SINGLE":
After the instruction for "PROTOCOL" and "SINGLE" input the start number blocks. You can use more than one start number block. Each start number block has the first and last start number (each four digits) of a continuous sequence. Both start numbers are separated by a hyphen. Each number block is separated by a carriage return. Input after the last number block 0000-0000 and carriage return.

`PSIST(CR)` ..... Protocol of selected start times
`PSIFT(CR)` ..... Protocol of selected finish times
`PSIRT(CR)` ..... Protocol of selected run times
`PSISQ(CR)` ..... Protocol of selected sequential times (lap times)
`PSIMT(CR)` ..... Protocol of selected memory times
`PSITT(CR)` ..... Protocol of selected total times
`PSIITC2(CR)` .... Protocol of selected intermediate times of channel C2
`PSIITC3(CR)` .... Protocol of selected intermediate times of channel C3
`PSIITC4(CR)` .... Protocol of selected intermediate times of channel C4
`PSIITC5(CR)` .... Protocol of selected intermediate times of channel C5
`PSIITC6(CR)` .... Protocol of selected intermediate times of channel C6
`PSIITC7(CR)` .... Protocol of selected intermediate times of channel C7
`PSIITC8(CR)` .... Protocol of selected intermediate times of channel C8
`PSIITC9(CR)` .... Protocol of selected intermediate times of channel C9
`PSIBRT(CR)` ..... Protocol of selected run times of the blue course for Dual Timer
`PSIRRT(CR)` ..... Protocol of selected run times of the red (right) course for Dual Timer
`PSILRT(CR)` ..... Protocol of selected run times of the left course for Dual Timer
`0001-0024(CR)` .. Start number block, e.g. form StNo. 1 to StNo. 24
`0065-0073(CR)` .. Start number block, e.g. form StNo. 65 to StNo. 73
`0105-0124(CR)` .. Start number block, e.g. form StNo. 105 to StNo. 124
`0000-0000(CR)` .. Finish with this input

8.3. RS 485 Interface (16, 23, 28): no function

Transfer Speed: 60 kBaud
Pin Arrangement: see page 95

8.4. Display Board Interface (24):

Transfer Format: 1 start bit, 8 data bit, no parity bit, 1 stop bit
Transfer Speed: 2.400 Baud
Transfer Protocol: ASCII

The display board interface has two different channels:
Channel 1: running time
Channel 2: running time and classement or run time and classement

Attention: Switch between channel 1 and channel 2 by turning the plug of socket (24) 180°.

Channel 1 has always the same output as shown in display 7 and 8. The adjusted display time (see menu 4 on page 52) is always valid for display 7 and 8 and channel 1 of the display board interface (24). Channel 1 does not output a classement.

You can switch channel 2 in the main menu (menu 19 on page 56) between running and standing time (run time). On channel 2 you have always an output of the classement.

`NNN.xxxxxxxxM:SSxxxx(CR)` running time (without 1/10 seconds)

NNN.xxxxHH:MM:SSxxxx(CR)	running time (without 1/10 seconds)
NNN.xxxxHH:MM:SS.zxx(CR)	running time (with 1/10 seconds)
NNNCxxxxHH:MM:SS.zhtRR(CR)	channel C1, run time with rank
NNNCxxxxHH:MM:SS.zhtxx(CR)	channel C1, run time without rank
NNNDxxxxHH:MM:SS.zhtRR(CR)	channel C1, total time with rank
NNNDxxxxHH:MM:SS.zhtxx(CR)	channel C1, total time without rank
NNNAxxxxHH:MM:SS.zhtRR(CR)	channel C2, intermediate time 1
NNNBxxxxHH:MM:SS.zhtRR(CR)	channel C3, intermediate time 2
NNNExxxxHH:MM:SS.zhtRR(CR)	channel C4, intermediate time 3
NNNFxxxxHH:MM:SS.zhtRR(CR)	channel C5, intermediate time 4
NNNGxxxxHH:MM:SS.zhtRR(CR)	channel C6, intermediate time 5
NNNHxxxxHH:MM:SS.zhtRR(CR)	channel C7, intermediate time 6
NNNIxxxxHH:MM:SS.zhtRR(CR)	channel C8, intermediate time 7
NNNJxxxxHH:MM:SS.zhtRR(CR)	channel C9, intermediate time 8
NNNSxxx©xxxxsxss.ssxRR(CR)	Speed
ANNNxxxxxHH:MM:SS.zhtRR(CR)	sequential time for program Split-Sequential

NNN ..... start number (3 digit)
. ..... a point on the fourth digit is the identification for a running time
A,B,C, ...,H,I,J ..... address for display board (digit 1)
A,B,C, ...,H,I,J ..... identification of the channel (digit 4)
HH:MM:SS.zht ..... time in hours, minutes, seconds, and 1/1000 seconds
© ..... speed measurement: output of the following ASCII characters
01 Hex. for km/h, 02 Hex. for m/s, 03 Hex. for mph
RR ..... rank
x ..... blank
(CR) ..... carriage return

Pin Arrangement: see on page 94

Cable from TdC 8000 to display board GAZ4: 010-10
Cable form TdC 8000 to Teledata TED-TX with supply: 107-10

In the main menu you can do the following adjustment for the display board interface (24):

Display Time 1: **Menu 4:** **DISPLAY TIME 1 = 03 s**

You can adjust the amount of time that it shows a stopped time on the display (7) or display board. This time we call display time 1. You can select the display time between 0 and 99 seconds.

```
Menu 4: DISPLAY Time 1 = 03 s

Save with: ENTER
```

input seconds with finish kb (15)

Confirm input with <ENTER>

Pre adjusted value: Display Time 1 = 3 seconds

Display Time 2: **Menu 5:** **DISPLAY TIME 2 = 03 s**

You can adjust the amount of time that it shows the second stopped time in the second heat (total time or run time) on the display (7) or display board. This time we call display time 2. You can select the display time between 0 and 99 seconds.

Menu 5: DISPLAY Time 2 = 03 s (15)	input seconds with finish keyboard
Save with: ENTER	Confirm input with <ENTER>

Pre adjusted value: Display Time 2 = 3 seconds

Display Board Channel 2: **Menu 18: D-BOARD CHANNEL 2 = OFF**

You can adjust the channel 2 of the display board interface (24). If you have channel two on it outputs no running time (only run times). It outputs the classement always on channel 2. You can select between channel 1 and channel 2 by turning the plug of the display board cable 180°.

Menu 18: D-BOARD CHANNEL 2 ON F1	output of run times
OFF< F2	output of running time
Save with: ENTER	Confirm selection with <ENTER>

ON = <F1> ..... run time and classement
OFF = <F2> ..... running time and classement

Pre adjusted value: D-Board Channel 2 is off (running time)