L I S T   O F   C O N T E N T S

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GENERAL

The Comet is a Computer, used to measure, store, and transfer data.

Comet Specifications:

- Storage for 950 times (expandible up to 4000) including start number

- Selectable timing precision: 1 sec. to 1/1000 sec.

- 4 time channels

- 1 set of plugs to synchronize or start the Comet

- Battery-buffered RAM

- 2 photocell sockets

- RS 232 interface for computer connection (e.g. ALGE 4000)

- Simple operating (instructions through display)

- Flexible programming

The Comet can measure and store times and speeds and is able to transfer stored data to a computer by using specific software. The Comet also serves as a drive-terminal for the ALGE display-board GAZc. There is a calculator-program to calculate run-times, total-times, as well as Nordic and alpine points.

POWER SUPPLY

The Comet can be run with batteries, NiCad rechargeables (as an option) or with an external supply.

Batteries:

4 Alkaline Mignon Batteries R 6; 2 Ah
Working time with fully charged batteries:

Temperature in °C	+20°	0°	-20°
Comet	60 h	53 h	46 h
Comet + 1 photocell	33 h	29 h	26 h
Comet + 2 photocells	15 h	13 h	11 h

NiCad Rechargeables:

4 NiCad accumulator Mignon batteries R6; 0,5 Ah
Working time with fully charged accumulators:

Temperature in °C	+20°	0°	-20°
Comet	12 h	10 h	9 h
Comet + 1 photocell	7 h	6 h	5 h
Comet + 2 photocells	5 h	4 h	3 h

Charging of the NiCad accumulators: with ALGE charging set LG-Comet or NLG4

Charging time: about 14 hours

Attention: If you choose to replace the Alkaline batteries with NiCad accumulators, please contact your ALGE representative for minor, but important adjustments.

Please respect the environment. Return your batteries to a recycling station or dispose of them in other proper manner!
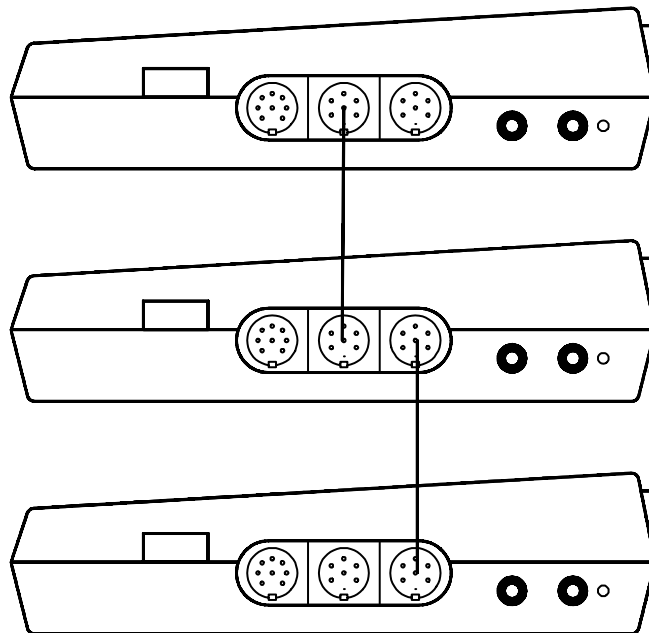
External Power Supply:

With a 12 Volt car-battery or an ALGE charging set LA-Comet or NLG4. Connect the power source to the 6 terminal DIN socket.
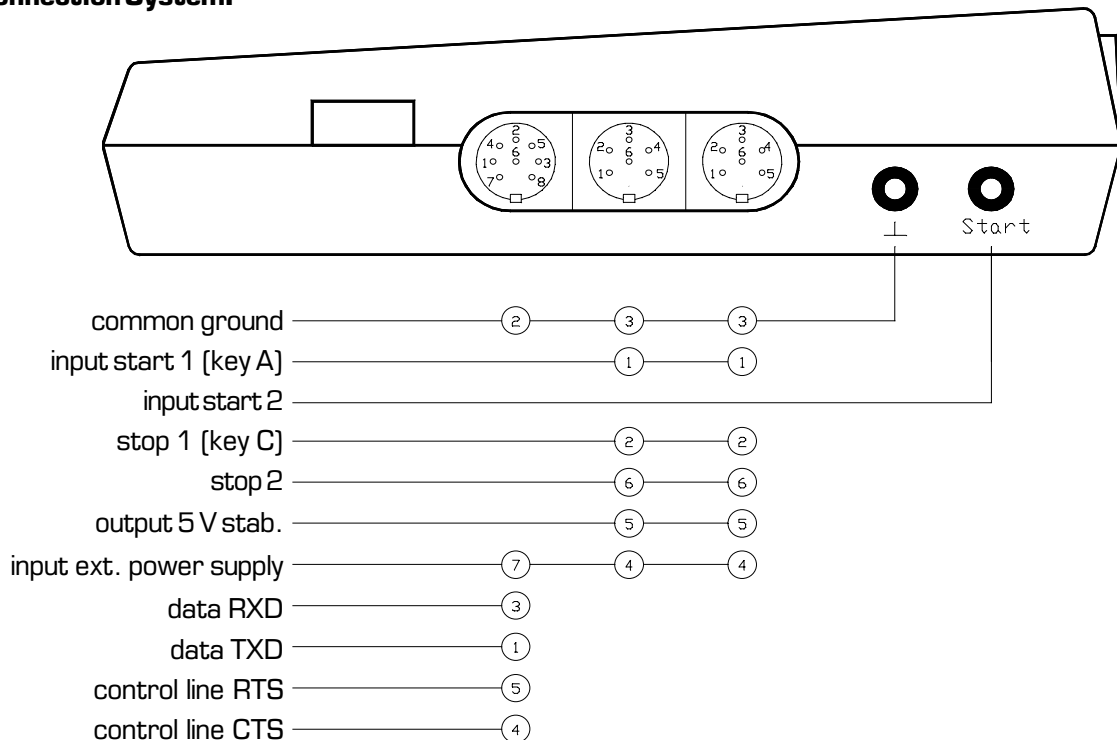
SYNCHRONIZATION OF SEVERAL TIMERS

If several timers are used at the same time (e.g. TdC 4000, Comet and Start Clock) all the timers have to be synchronized (started at the same time) before the start.

- Connect all timers with cable 004

- Feed in the same time (synchron time) to all timers

- Start all the timers by pressing button „A" on the Comet

- All timers are ready for operation!

TECHNICAL DATA

Measuring range:	23 h 59 min. 59,999 sec.
Accuracy:	+/- 0.005 sec./h at 20°C
	+/- 0.05 sec./h at -15 to 50°C
Quartz frequency:	9,216 MHz
Working temperature:	-20 to 45°C
Storing temperature:	-40 to 65°C
Memory:	950 times standard,
	expandible up to 4000 times
Operating keys:	foil-keyboard with 16 keys
Display:	2 x 16 sign display

Connection System:

common ground	2	3	3
input start 1 (key A)		1	1
input start 2			
stop 1 (key C)		2	2
stop 2		6	6
output 5 V stab.		5	5
input ext. power supply	7	4	4
data RXD	3		
data TXD	1		
control line RTS	5		
control line CTS	4		

Internal power supply:	4 Alkaline Mignon batteries standard, 4 NiCad rechargeables as an option
External power supply:	12 V battery, ALGE LG-Comet, or ALGE NLG4
Power consumption:	27 mA to 33 mA (internal power supply), additional 25 mA per photocell (if supplied by Comet)

Charging time with built in NiCad-accumulators: about 14 hours

SERIAL INTERFACE:

Asynchronous serial communication interface, compatible to V.24 and RS 232.

Voltage level: Comet output   +/- 5 V
                      allowable input level   +/-12V

Transfer format: 1 start bit
                      8 data bit
                      1 stop bit
                      no parity bit

Handshake: hardware handshake (connect RTS to CTS if handshake is not necessary)
                      X-ON/X-OFF handshake (as an option)

Transfer rate: 2400 Baud standard
                      4800 Baud as an option

Data format: standard 23 byte data, LF, CR

                      data: 8 bit ASCII (MSB always one)
                      LF: LINE FEED (0A hexadecimal)
                      CR: CARRIAGE RETURN (0D hexadecimal)

Interface description and format:

1	TXD	transmit data	output	
2	GND	ground		
3	RXD	receive data	input	
4	CTS	clear to send	input	(other device ready to send)
5	RTS	request to send output	output	(Comet ready to receive)
6	6	start line 1	in-/output	(start line for stopwatch)
7	6-15 VDC	power supply	input	
8	—	not connected		

CONNECTION CABLES FOR THE COMET

Start cable:

    000   two core start cable (e.g. for startgate)
    002   start cable for the photocell (with power supply)
    024-02 Start hand switch

Stop cable:

    001   stop cable (final times)
    003   stop cable (intermediate times)
    020-02 Stop handswitch

Start and Stop cable:

    015   start and stop cable

Synchronizations cable:

    004   for the synchronization of several timers

Data transfer cable:

    056-02 data transfer Comet (Memotimer) - TdC 4000
    058–2   data cable and power supply for Printer P3
    064-01 data transfer Comet - Comet
    065-02 data transfer Comet - Comet (with supply)
    066-02 data transfer Comet - XT Computer 25pol female)
    067-02 data transfer Comet - AT Computer (9pol female)
    030-10 data from Comet to display board with supply
    060-10 data from Comet to display board without supply
    073-05 data form Comet to Videogenerator VG2
    075-10 data from TdC4000 to Comet Parallel Display (without supply)
    076-10 data from TdC4000 to Comet Parallel Display (with supply)

Display-board cable:

    030 … data from Comet to GAZc with supply
    060 … data from Comet to GAZc without supply (two lead)

External supply of the Comet:

    005--2 external supply by a 12 V battery

Cable code:

All cables come with a number consisting of three figures, with one or two hyphen and with another number.
The first number gives you information about the sort of cable, the second number tells you the cable's length.

COMET - CONNECTIONS

Stopwatch:

Socket 11: computer connection (RS 232 interface)
            ALGE Printer P4
            scanner

Sockets 12: ALGE photocell
            ALGE manual button
            ALGE Startmicrophone
            ALGE contact tape
            ALGE charging set LG-Comet
            ALGE charging set NLG 4
            ALGE Telesignal RX

Socket 13: ALGE startgate
            ALGE Startmicrophone with SV3/SM

Nordic or +/- Timer:

Socket 11: computer connection (RS 232 interface)
            ALGE Printer P4

Sockets 12: ALGE photocell
            ALGE manual button
            ALGE Startmicrophone
            ALGE contact tape
            ALGE charging set LG-Comet
            ALGE charging set NLG 4
            ALGE Telesignal RX

Socket 13: ALGE startgate
            ALGE Startmicrophone with SV3/SM
            as output to Timer S3 or TdC 4000
            as output to relays (e.g. horn)

Memotimer:

Socket 11: computer connection (RS 232 interface)
            ALGE Printer P4
            ALGE TdC 4000
            scanner

Sockets 12: ALGE photocell
            ALGE manual button
            ALGE Startmicrophone
            ALGE contact tape
            ALGE charging set LG-Comet
            ALGE charging set NLG 4
            ALGE Telesignal RX

Socket 13: ALGE startgate
            ALGE Startmicrophone with SV3/SM

Skitest:

Socket 11:   computer connection (RS 232 interface)
ALGE display board GAZc
ALGE Printer P4

Sockets 12: ALGE photocell
ALGE manual button
ALGE Startmicrophone
ALGE contact tape
ALGE charging set LG-Comet
ALGE charging set NLG 4
ALGE Telesignal RX

Socket 13:   ALGE startgate
ALGE Startmicrophone with SV3/SM

Calculator:

Sockets 12: ALGE charging set LG-Comet
ALGE charging set NLG4

Terminal:

Socket 11:   ALGE Junction-box (for computer)

Sockets 12: ALGE charging set LG-Comet
ALGE charging set NLG4

Commander:

Socket 11:   ALGE display-board

Sockets 12: ALGE charging set LG-Comet
ALGE charging set NLG4
ALGE manual button

Socket 13:   output to relays (e.g. horn)

Game-Info and Football Score Board:

Socket 11:   ALGE display-board

Sockets 12: ALGE charging set LG-Comet
ALGE charging set NLG4
ALGE button

COMET SOFTWARE

There is a large selection of COMET software to choose from. You can a single programme, or a combination of programs for your Comet.

Ballspeed:

Measuring the speed of ball (football, soccer,…)
Combination software: -   Memotimer, Commander, Calculator, Ballspeed, Game-Info, Terminal

Bib Memory:

Stores the start numbers (manual input), later it is possible to transmit the numbers to a computer

Calculator:

Calculation of heat times, total times, and of race points
Combination software: -   Stopwatch, Memotimer, Commander, Skitest, Calculator
                          -   Memotimer, Commander, Calculator, Ballspeed, Game-Info, Terminal
                          -   Memotimer, Commander, Calculator, Speed1, Game-Info, Terminal

Commander:

Numerical input for a ALGE display-board (points, length, height)
Combination software: -   Stopwatch, Memotimer, Commander, Skitest, Calculator
                          -   Memotimer, Commander, Calculator, Ballspeed, Game-Info, Terminal
                          -   Memotimer, Commander, Calculator, Speed1, Game-Info, Terminal

Game-Info:

display of score and time on an ALGE display-board
Combination software: -   Memotimer, Commander, Calculator, Ballspeed, Game-Info, Terminal
                          -   Memotimer, Commander, Calculator, Speed1, Game-Info, Terminal

Parallel-Display:

Program to show the data from the timer display on a Comet (e.g. for speaker)
Single software

Memoscan:

Wireless time measuring in time of day mode. Input of scanner is also stop impulse
Combination software: -   Memoscan, Stopscan

Memotimer:

Wireless time measuring in time of day mode.
Combination software: - Stopwatch, Memotimer, Commander, Skitest, Calculator
                         - Memotimer, Commander, Calculator, Ballspeed, Game-Info, Terminal
                         - Memotimer, Commander, Calculator, Speed1, Game-Info, Terminal

Skitest:

Ideal time measuring and data storage for ski and way testing
Combination software: - Stopwatch, Memotimer, Commander, Skitest, Calculator

Speed1:

Speed measurement in km/h. Measuring distance is adjustable between 1 and 99 m.
Combination software: - Memotimer, Commander, Calculator, Speed1, Game-Info, Terminal

Stopscan:

Universal time and speed measuring, scanner input makes stop impulse
Combination software: - Memoscan, Stopscan

Stopwatch:

universal time and speed measuring
Combination software: - Stopwatch, Memotimer, Commander, Skitest, Calculator

Tennis:

Displays the score of a tennis game on ALGE display-boards
Single software

Terminal:

Input of points to a computer (ski-jumping, figure skating, gymnastics,…)
Combination software: - Memotimer, Commander, Calculator, Ballspeed, Game-Info, Terminal
                         - Memotimer, Commander, Calculator, Speed1, Game-Info, Terminal

Time/Temperature:

Shows the time and temperature (alternating in 5 seconds intervals) on a ALGE display-board.
Single software

Time/Temperature variable:

Shows the time and temperature (alternating in 5 seconds intervals) on a ALGE display-board. The output format is flexible.
Single software

+ / - Timer (new since December 1990: Nordic):

Cross-country timer with coaching information