

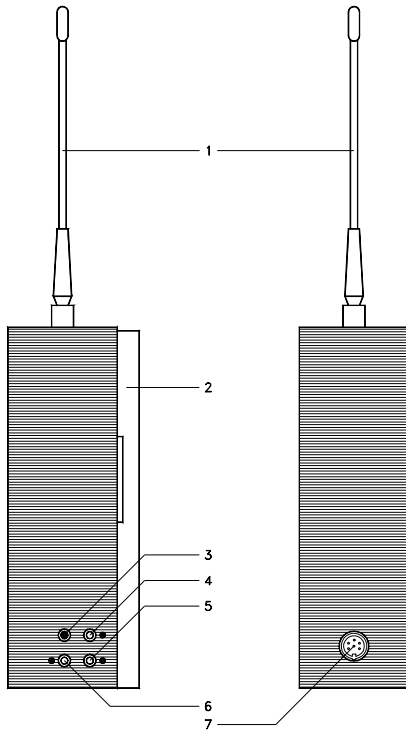
TELEDATA

TED-TX / TED-RX

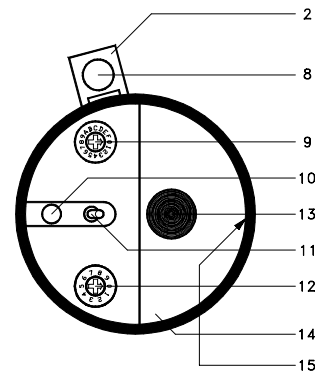


ALGE
TIMING

English



TED TX /RX from the bottom


TED TX

- 1 Antenna
- 2 Green holder with velcro tape
- 3 LED
- 4 Banana socket yellow: data input
- 5 Banana socket green: signal input
- 6 Banana socket black: common ground
- 7 DIN-socket: data- and signal input, ext. supply input
- 8 3/8 inch socket for tripod fastening
- 9 Code-switch (16 positions)
- 10 Device-key
- 11 Device-switch
- 12 Code-switch (10 positions)
- 13 Fastening screw for battery holder
- 14 Battery cover
- 15 Device sticker with device number

TED TX
TED RX

- 1 Antenna
- 2 Red holder with velcro tape
- 3 LED
- 4 Banana socket yellow: data output
- 5 Banana socket green: signal output
- 6 Banana socket black: common ground
- 7 DIN-socket: data- and signal output, ext. supply input
- 8 3/8 inch socket for tripod fastening
- 9 Code-switch (16 positions)
- 10 Device-key
- 11 Device-switch
- 12 Code-switch (10 positions)
- 13 Fastening screw for battery holder
- 14 Battery cover
- 15 Device sticker with device number

TED RX

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1. GENERAL

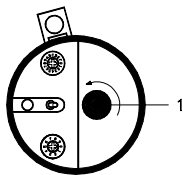
- Use:** Wireless transmission of timing impulses and data
- Radio Frequency:** 70 cm band (standard frequency= 433,500 MHz)
- TED-Types:**
- TED-TX10:** Teledata Transmitter with a RF output power of 10 mW, about 1.5 km reach, built in I/4 antenna
 - TED-TX400:** Teledata Transmitter with a RF output power of 10 mW, about 1.5 km reach, antenna connection through BNC socket
 - TED-RX:** Teledata receiver (for TED-TX10 and TED-TX400 identical), built in I/4 antenna
- Minimum configuration:** 1 TED-TX and 1 TED-RX
- Additions:**
- additional TED-TX for impulse- or data transmission
 - additional TED-RX for data transmission
 - RX-C10:** impulse transmission for two and more timing channels
- Identification for TED-TX:** device sticker (15) and green holder (2)
- Identification for TED-RX:** device sticker (15) and red holder (2)
- Information on the device sticker:**
- device type
 - device frequency
 - device number
 - power output (only on TED-TX)
- Impulse transmission:** The impulse transmission works direct from any ALGE impulse device to any ALGE timing device.
- Data transmission ALGE 1 Sec.:** The TED-TX sends each data string 10 times. It sends per second one different data string.
- Data transmission ALGE 0.1 Sec.:** The TED-TX sends each data string 1 time. It sends per 0.1 second one data string.
- Data transmission 2400 Baud:** Data transmission with 2400 Baud, where it needs a code at the beginning and end of each data package.
- Data transmission 4800 Baud:** Data transmission with 4800 Baud, where it needs a code at the beginning and end of each data package.
- Data transmission Direct:** Transmits all data, the transmitter is always turned on.
- System test:**
- signal strength test
 - interference test
- Power supply:**
- 6 batteries (type AA) or
 - 6 NiCd batteries (type AA)
 - external supply

2. POWER SUPPLY

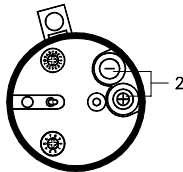
There are two ways to supply the TED:

- internal supply: with six batteries or NiCad (type AA)
- external supply: with a ALGE charger or from a ALGE timing device or 12 Volt Battery

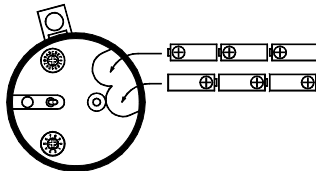
2.1. Changing Batteries:



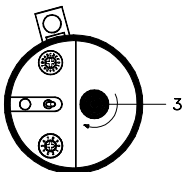
- You will reach the battery compartment from the bottom.
- Screw the fastening screw counter-clockwise.



- Remove the battery cover.
- Remove the batteries (hold the TED upright, so the batteries fall out of the battery compartment).



- Insert new (or loaded) batteries (six batteries). Be aware of polarity - see picture in the battery compartment.



- Put battery cover on and screw fastening screw clockwise. You must turn the screw until the stop (the last turns are harder, because of the force of the spring).

2.2. Using Alkaline Batteries:

Each TED needs 6 Alkaline batteries (type AA). The LED (3) shows the battery capacity during normal operation.

Blinking of LED (3):

The LED has in the signal strength test a different function (see point 3.5).

Color of LED (3)	Battery Capacity
green	35 to 100 %
border between green and orange	about 35 %
orange	20 to 35 %
border between orange and red	about 20 %
red	less than 20 %
off	empty

The TED switches automatically off, as soon as the battery voltage is lower than 5 Volt!

Attention: If you buy replacement batteries for a event, be aware that you need for each TED (receiver and transmitter) six batteries.

Empty Battery Warning:

TED-TX: When the LED (3) switches to red on the TX, it sends along with the next impulse or data string a message to the TED-RX. The TED-RX then turns on an alternating high and low sound to indicate that the TED-TX needs new batteries.

TED-RX: When the LED (3) switches to red an alternating high and low sound indicates that the TED-RX needs new batteries. Make sure you check both units every time you hear the alternating sound.

Working duration of batteries:

The measurements shown below are made with Alkaline batteries (type Energizer) at room temperature (25°C, 77 F). Please notice that the capacity of batteries drops fast at low temperatures (at -20°C (-4F) about 20 % capacity).

TED-TX10	without photocell	1 impulse per minute	about 300 hours
TED-TX10	with photocell	1 impulse per minute	about 66 hours
TED-TX10	---	1 data transmission per minute	about 270 hours
TED-TX10	---	continues data transmission	about 54 hours
TED-TX400	without photocell	1 impulse per minute	about 270 hours
TED-TX400	with photocell	1 impulse per minute	about 60 hours
TED-TX400	---	1 data transmission per minute	about 54 hours
TED-TX400	---	continues data transmission	about 6 hours
TED-RX	---	in all equal	about 54 hours

2.3. Using NiCd Rechargeable Batteries:

Each TED needs 6 NiCad rechargeable. You cannot charge the batteries inside the device. To load the batteries you need a separate charger. The LED (3) shows the battery capacity during the normal operation.

Blinking of LED (3):

The LED has in the signal strength test a different function (see point 3.5).

Color of LED (3)	Battery Capacity
green	15 to 100%
border between green and orange	about 15 %
orange	5 to 15 %
border between orange and red	about 5 %
red	less than 5 %
off	empty

The TED switches automatically off, as soon as the battery voltage is lower than 5 Volt!

Empty Battery Warning:

TED-TX: When the LED (3) switches to red on the TX, it sends along with the next impulse or data string a message to the TED-RX. The TED-RX then turns on an alternating high and low sound to indicate that the TED-TX needs new batteries.

TED-RX: When the LED (3) switches to red an alternating high and low sound indicates that the TED-RX needs new batteries. Make sure you check both units every time you hear the alternating sound.

Working duration of batteries:

The measurements shown below are made with NiCad batteries (type Panasonic 700 mAh) at room temperature (25°C, 77 F). Please notice that the capacity of batteries drops fast at low temperatures (at -20°C (-4F) only about 80 % capacity).

TED-TX10	without photocell	1 impulse per minute	about 100 hours
TED-TX10	with photocell	1 impulse per minute	about 22 hours
TED-TX10	---	1 data transmission per minute	about 90 hours
TED-TX10	---	continues data transmission	about 18 hours
TED-TX400	without photocell	1 impulse per minute	about 90 hours
TED-TX400	with photocell	1 impulse per minute	about 20 hours
TED-TX400	---	1 data transmission per minute	about 18 hours
TED-TX400	---	continues data transmission	about 2 hours
TED-RX	---	in all equal	about 18 hours

2.4. External Supply:

You can supply the TED from a power supply.

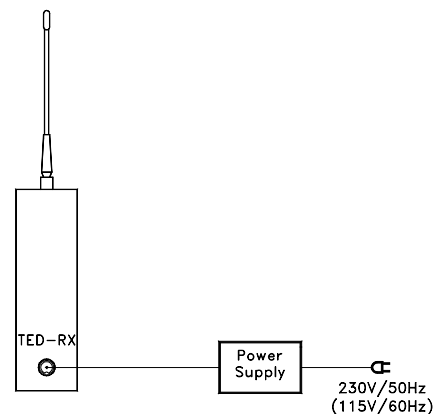
Voltage for Power Supply:	TED-TX10:	+6,5 to 28 VDC
	TED-TX400:	+9 to 15 VDC
	TED-RX:	+6,5 to 28 VDC

2.4.1. Direct Power Supply:

You can supply the TED from the following ALGE chargers:

- Power Supply NLG8
- Power Supply NLG4
- Power Supply LG-Comet (do not use for TED-TX400)
- Net-Battery-Device NBG

Plug the charger at the mains and TED (DIN socket 7)



Attention: Depending on the voltage of you county you need a ALGE power supply for 230 V / 50 Hz or 115 V /60 Hz. On voltage will be written on the ALGE power supply.

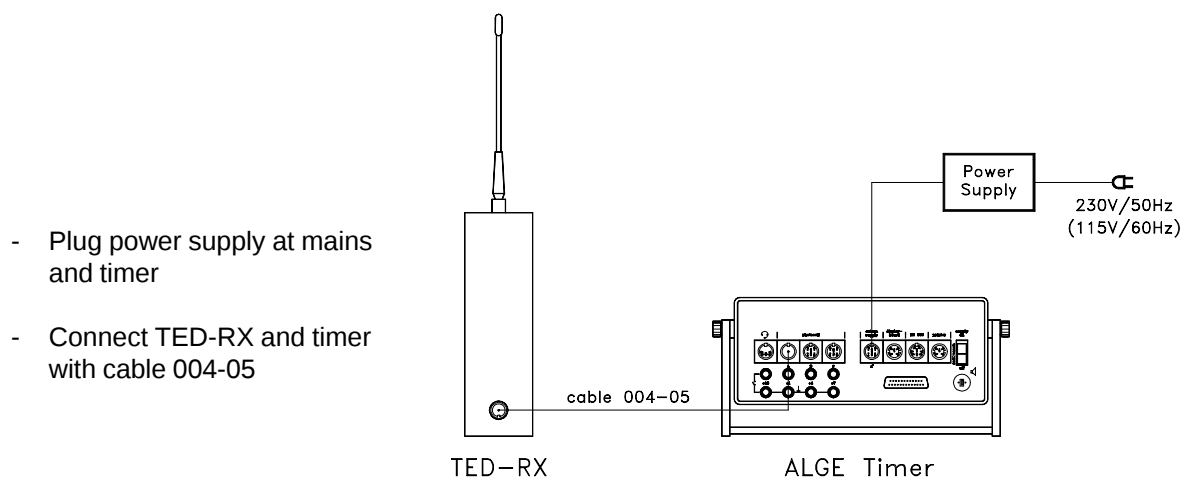
2.4.2. Power Supply through the Timer:

When using the mode "Impulse Transmission" it is possible to supply the TED-RX from the power supply of the ALGE Timing device. Use cable 004-05 between TED-RX and timer.

Attention:

You can supply the TED-RX only if the timer is external supplied. From the internal batteries of the timer you cannot supply the TED-RX.

You cannot supply a Comet and TED-RX with the LG-Comet.



3. OPERATION

There are three different types of Teledata TED. Each TED shows the type on the area, where you have the antenna.

TED-TX10:

1/4-antenna screwed on TED

TED-TX400:

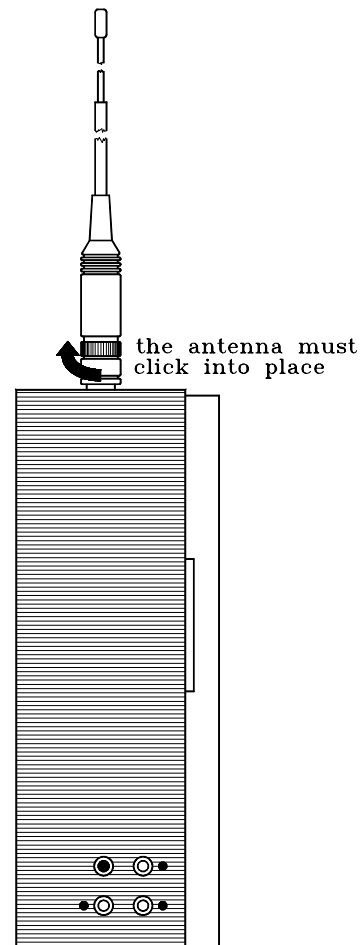
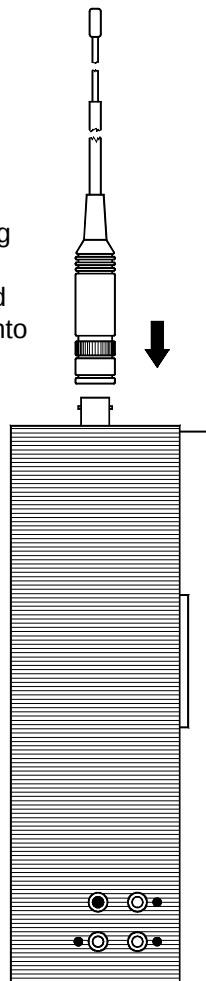
1/2-antenna with BNC-connection

TED-RX:

1/4-antenna screwed on TED

BNC-Antenna-Connection for TED-TX400:**Fasten the Antenna:**

- put antenna on BNC-plug of TED-TX400
- rotate the antenna until it falls into the plug
- hold the antenna on the lower section and turn it clockwise until the antenna clicks into position

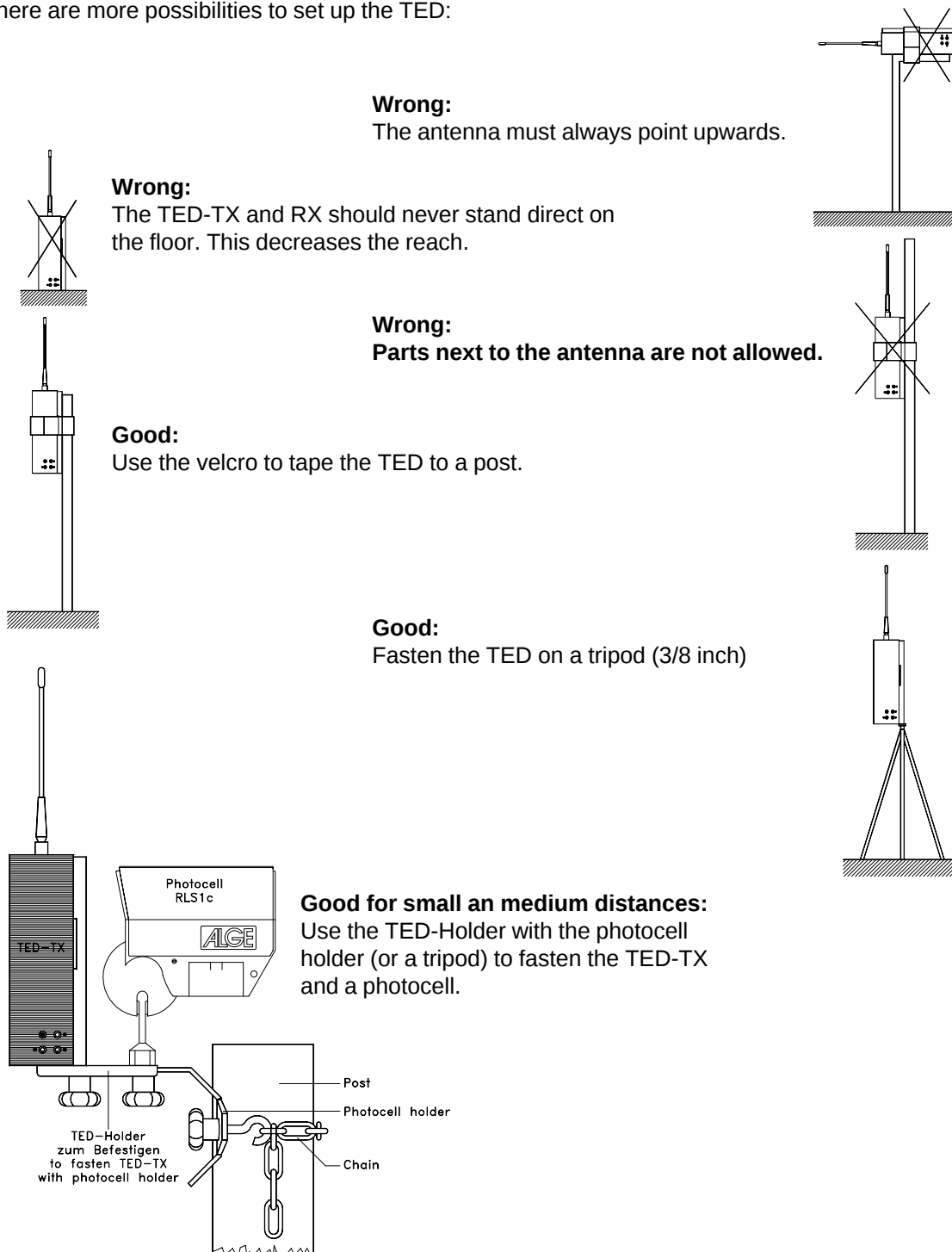
**Remove the Antenna:**

- hold the antenna on the lower section and turn until the antenna clicks out or place
- remove antenna

3.1. Set up:

The useful distance of the TED system depends on signal strength. You have to spend a reasonable effort to properly mount both the TX and RX units. The position of the TED-TX and TED-RX. Mostly you improve the receiver signal strength by moving the TED-TX and TED-RX to the right position (high signal strength = high impulse or data safety).

There are more possibilities to set up the TED:



3.2. Switching on:

Normal Mode:

- switch device-switch (11) on
- TED works in the impulse transmission mode

Test-Mode:

- press device-key (10)
- device-switch (11) to position ON, LED (3) must blink
- release device-key (10)
- test mode switches automatically off after one minute, manually you can switch it off with device-key (10).

Impulse Transmission:

device-switch (11) to position ON, LED (3) must blink

Data Transmission ALGE 1 Sec.:

- device-switch (11) to position ON, LED (3) must blink
- when a data string with the right format arrives at the TED-TX it switches to this mode.

Data Transmission ALGE 0.1 Sec.: - set code switch (12) from TED-TX and RX on position 1
 - device-switch (11) to position ON, LED (3) must blink

Data Transmission 2400 Baud:

- set code switch (12) from TED-TX and RX on position 3
- device-switch (11) to position ON, LED (3) must blink
- transmission of each data string with 2400 Baud
- each data string needs a code at the start and end

Data Transmission 4800 Baud:

- set code switch (12) from TED-TX and RX on position 4
- device-switch (11) to position ON, LED (3) must blink
- transmission of each data string with 4800 Baud
- each data string needs a code at the start and end

Data Transmission "Direct":

- set code switch (12) from TED-TX and RX on position 6
- device-switch (11) to position ON, LED (3) must blink
- transmission of each data string (with 2400 or 4800 Baud)

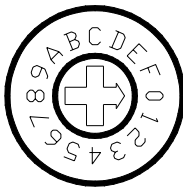
3.3. Choosing the Operation Modes:

Switch	Signale Mode	Data Mode
code switch (12)	position 0 to 9 to select the timing channel	position 0: data transmission ALGE 1 sec. position 1: data transmission ALGE 0.1 sec. position 2: no function position 3: data transmission 2400 Baud position 4: data transmission 4800 Baud position 6: data transmission direct position 7 to 9: no function
code switch (9)	for address	for address
device key (10)	field strength on/off	transmit last data string again

You get as well into the signal strength test by making three short cuts between the green (5) and black (6) banana socket within a short time..

3.4. Address:

The code-switch (9) to address the TED is located in the bottom and has 16 switch positions. Within a system all TED-TX and TED-RX need the same address.



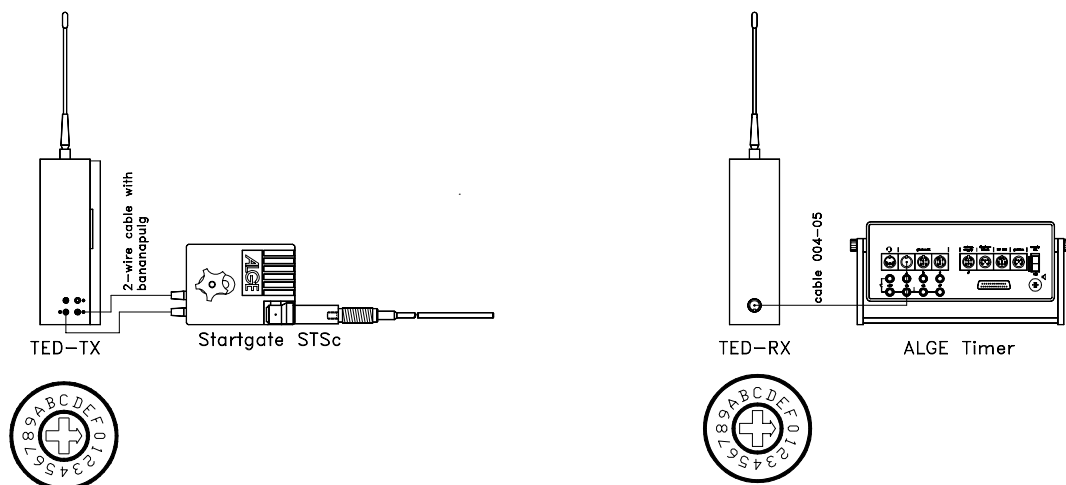
Together with the TED you will receive a small screwdriver. It is used to operate the code-switch (9) and (12). The arrow of the switch shows always the switch position. The factory adjustment is 0.

Code-Switch (9)	Address
switch position = 0	address = 0
switch position = 1	address = 1
switch position = 2	address = 2
switch position = 3	address = 3
switch position = 4	address = 4
switch position = 5	address = 5
switch position = 6	address = 6
switch position = 7	address = 7
switch position = 8	address = 8
switch position = 9	address = 9
switch position = A	address = A
switch position = B	address = B
switch position = C	address = C
switch position = D	address = D
switch position = E	address = E
switch position = F	address = F

If different ALGE TED-systems are used in the same area, it is important that every system works on a different address. The address protects from wrong impulses or data, but other impulse or data strings can block the receiver.

There is the possibility that you could lose an impulse, if there is another system in use that has a stronger signal. The only guaranteed way to prevent interference is by using a totally separate frequency. This can be ordered by your ALGE dealer.

e.g. Impulse transmission of the start signal::



You must set the same address for TED-TX and TED-RX.

3.5. Signal Strength Test to find the ideal Position:

Trouble free operation of the TED-system depends on spending time to properly install the TX and RX.

Attention: You can only test the signal strength in the impulse transmission mode.

How do you start the signal strength test:

- Turn the TED-TX with device-switch (11) on.
- Press the device-key (10) of the TED-TX .
- Fasten the TED-TX in a good position (see page 11).
- Turn the TED-RX with device-switch (11) on.
- The loudspeaker of the TED-RX has now a sound and the LED blinks.
 - > As higher the sound, as higher (better) the signal strength.
 - > If the LED (3) blinks green: high signal strength from the TED-TX.
 - > If the LED (3) blinks orange: low signal strength from the TED-TX.
 - > If the LED (3) blinks red: very low or no signal strength from the TED-TX.
 - > If you hear voices in the speaker it means, that this frequency is being used for talking. This might cause trouble, you might lose data or impulses.
- The signal strength test ends automatically through a signal of the TED-TX after 1 minute (or when you press device key (10) of the TED-TX).

Always try moving the TED-RX first. If you cannot find a proper signal strength, then try moving the TED-TX. If it still fails then you have to reduce the distance or modify your application. Remember that you can connect the TED-RX to any existing wiring.

You can only judge the signal strength at the TED-RX!

Attention - please notice if you have a short distance between TED-TX and TED-RX:

In order to work without troubles make sure that the distance between TED-TX and TED-RX is more than 5 Meters. Otherwise it could overmodulate the receiver. For the TED-TX400 you should have a minimum distance of 10 m.

3.6. Interference Test:

This mode is designed to allow you to test for interference from other radios or to determine if data is being transmitted. This can be a handy way to check for problems during an event. The impulses are still being received as normal.

If you press the device-key (10) of the TED-RX for about half a second, it switches the speaker on. You can now listen for speech or data.

The LED shows the signal strength of the received signal. The naturally red LED turns green with good data reception and orange with questionable data. A single impulse will not register fast enough to see it.

To turn the interference test off press again device-key (10).

Attention: The TED-RX has double power consumption during this mode.

4. IMPULSE TRANSMISSION

The impulse transmission works direct from any ALGE-impulse trigger to ALGE timer by radio.

**Each impulse transmission through the TED
has a constant delay of 0.100 seconds.
Minimum error: 0.001 second**

- If you transmit only the start impulse with the TED you must add to each run time 0.1 seconds.
- If you transmit only the finish impulse with the TED you must subtract from each run time 0.1 seconds.
- If you transmit the start- and finish impulse you get the exact run time.

Attention:

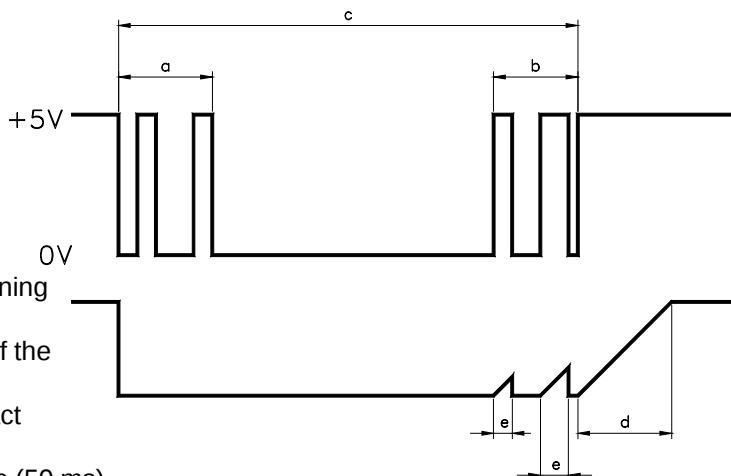
For time trail events such as cycling, skiing, etc the delay is constant for every competitor. Therefore you can use a single transmitter without compromising the results. It is only important where you are trying to measure a record time or speed. Be aware of the limitations of a single transmitter prior to your event.

The TED-TX and TED-RX is blocked after the beginning of the impulse for 0.1 seconds. This means each further impulse transmitted with TED-TX is lost during this time.

Double impulse protection:

The TED-TX has a built in double impulse protection. This prevents double impulses made by a bad switch. The double impulse protection time is 0.05 seconds.

- a Contact triggering at the beginning of the impulse
- b Contact triggering at the end of the impulse
- c Duration of impulse plus contact triggering
- d Double impulse protection time (50 ms)
- e Double impulse protection time stops, because the 0.05 seconds are not finished



Checking the impulse transmission:

- TED-TX:** During the transmission of a timing impulse the LED (3) blinks longer as normal.
- TED-RX:** When it receives a timing impulse the LED (3) blinks longer as normal.

Safety of an Impulse Transmission:

When you use the impulse transmission the TED replaces the cable between the impulse trigger and the timer. You must know, that radio (TED) is easy to disturb. This means that you do not receive at the timer the signal in case of a disturbance. When you use the TED to transmit the impulses you will never have the same safety as with wires.

The following ALGE devices you can use as impulse trigger:

- Startgate
- Photocell
- Tapeswitch TS
- Touchpad TP24 or TP18
- Startmicrophone SM7
- Startbeep STB1
- Startclock ASC1
- Handswitch 023-02 or 023-10

The following ALGE timers you can use as impulse receiver:

- TdC 8000:** Normally use the socket A or A' to connect cable 004-05. In special cases see the TdC 8000 manual for help.
- TdC 4000:** Plug cable 004-05 at one of the four sockets that say "ext. supply / lightbeam".
- Timer S4:** Normally use the socket A or A' to connect cable 004-05. In special cases see the Timer S4 manual for help.
- Timer S3:** Plug cable 004-05 at one of the two sockets that say "ext. supply / lightbeam".
- Comet:** Plug cable 004-05 at one of the photocell sockets.
- Videotimer VT2:** Plug cable 004-05 at one of the two sockets that say "ext. supply / lightbeam".
- OPTI 1sw:** Plug cable 004-05 at one of the four sockets that say "photocell". For the OPTI you have to know that you can transmit only start impulses. You cannot transmit the finish impulse, because the photocell does control the recording. With the TED you would only record a small part of the finish arrival.

Selection of the Impulse Transmission:

With the TED-TX you can transmit two impulse channels. Normally this will be the start- C0 and finish impulse C1 (use cable 004-05).

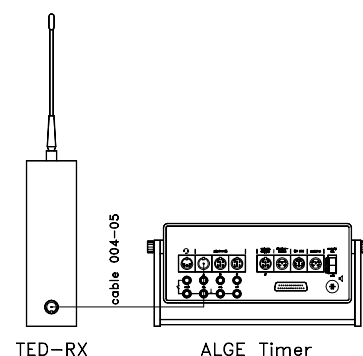
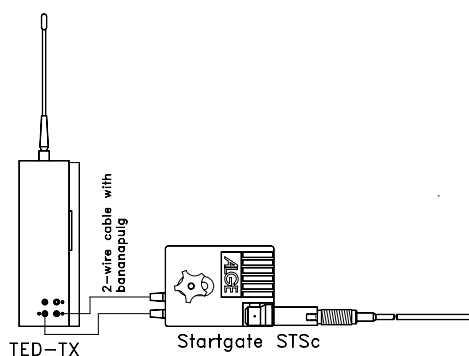
If you use additional with the TED the RX-C10, than you can receive up to 10 different impulse channels with the TdC 8000 and Timer S4 (see page 20).

Attention:

The TED-system will work with any normally open modern timing devices. Although we recommend always using ALGE devices, feel free to contact your local ALGE dealer.

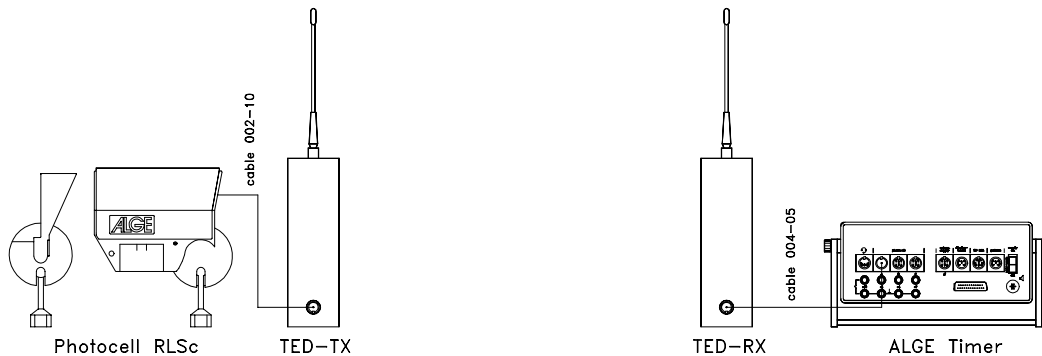
4.1. Impulse Transmission from a Startgate:

- Connect Startgate and TED-TX with cable 000-05 (2-wire cable with banana plugs)
- Connect TED-RX and timer with cable 004-05 (use socket A or A' for Timer S4 or TdC 8000).



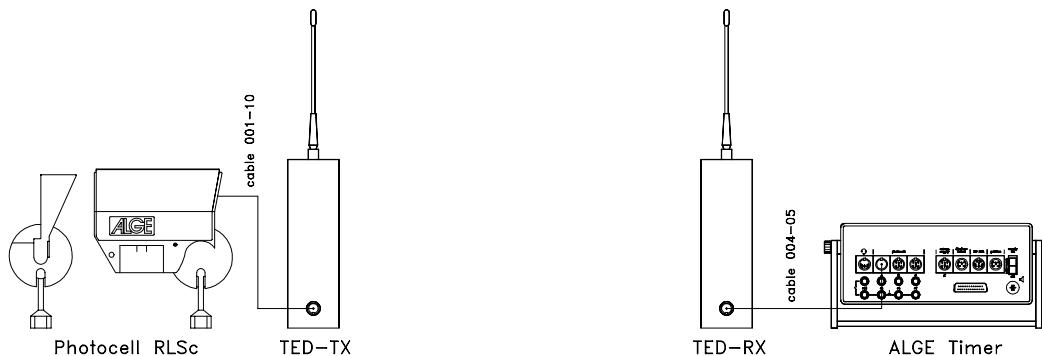
4.2. Impulse Transmission from a Start-Photocell:

- Connect photocell and TED-TX with cable 002-10
- Connect TED-RX and ALGE timer with cable 004-05 (use socket A or A' for Timer S4 or TdC 8000)



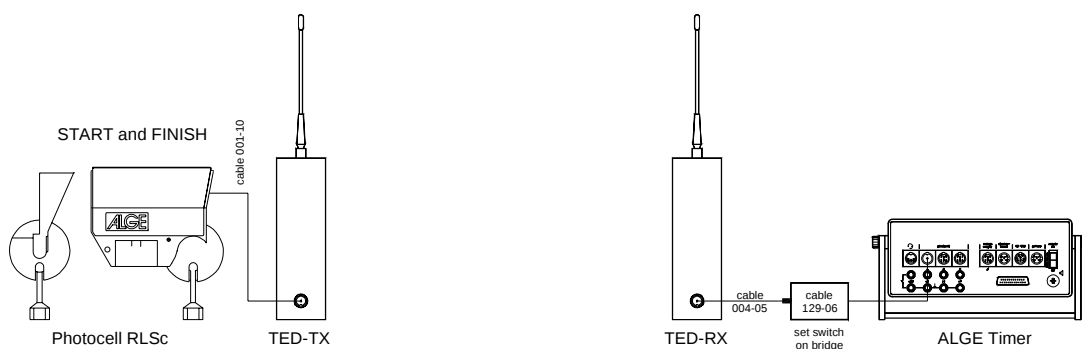
4.3. Impulse Transmission from a Finish-Photocell:

- Connect photocell and TED-TX with cable 001-10
- Connect TED-RX and ALGE timer with cable 004-05 (use socket A or A' for Timer S4 or TdC 8000)



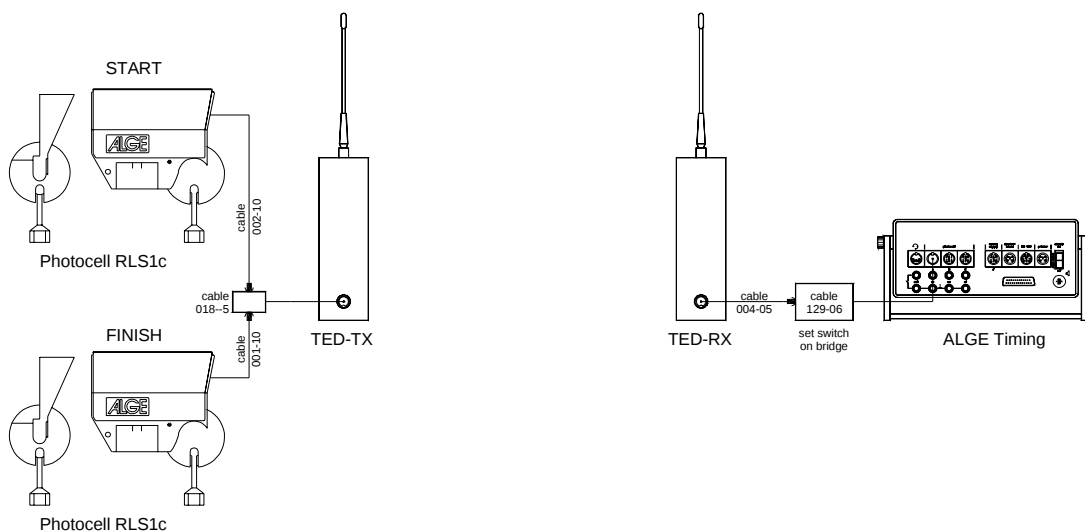
4.4. Impulse Transmission from a Photocell used for Start and Finish:

- Connect photocell and TED-TX with cable 002-10
- Connect adapter 129-06 at the timer (use socket A or A' for Timer S4 or TdC 8000)
- Connect adapter 129-06 at the TED-RX and set the switch on position bridge



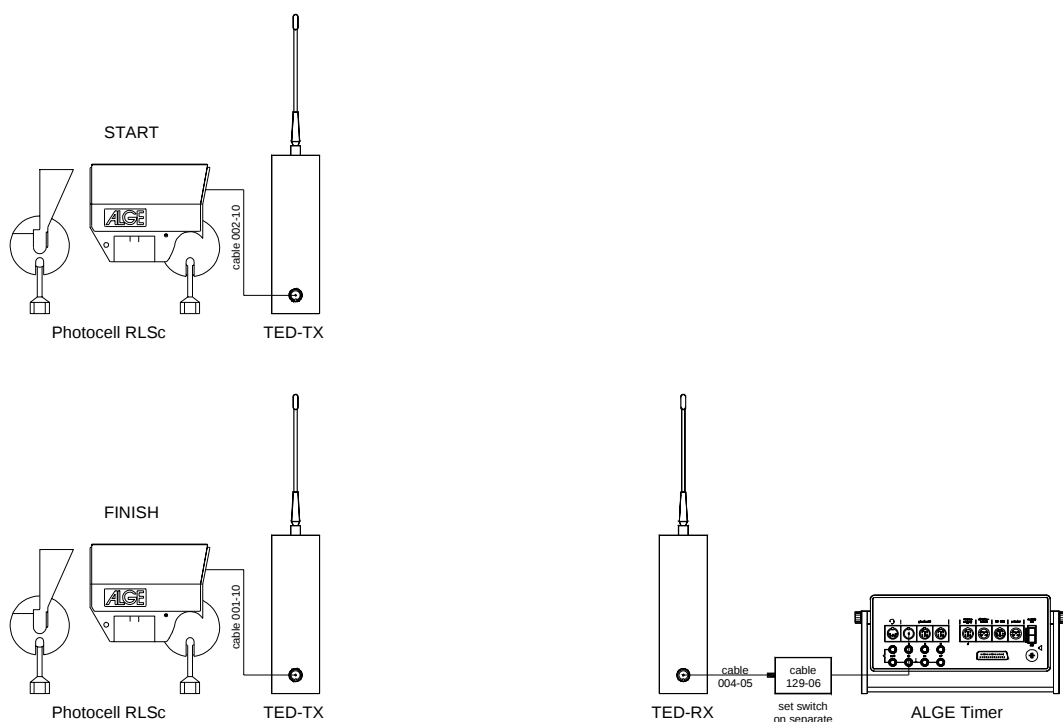
4.5. Impulse Transmission with two Photocells for Start and Finish:

- Connect adapter 018--5 at the TED-TX
- Connect cable 002-10 at the start-photocell and at adapter 018--5
- Connect cable 001-10 at the finish-photocell and at adapter 018--5
- Connect adapter 129-06 at the timer (use socket A or A' for Timer S4 or TdC 8000)
- Connect adapter 129-06 at the TED-RX and set the switch on position bridge



4.6. Impulse Transmission with one Photocell for Start and Finish:

- You need two TED-TX and one TED-RX
- Connect cable 002-10 at the start-photocell and the first TED-TX
- Connect cable 001-10 at the finish-photocell and the second TED-TX
- Connect adapter 129-06 at the timer (use socket A or A' for Timer S4 or TdC 8000)
- Connect adapter 129-06 at the TED-RX and set the switch on position separate



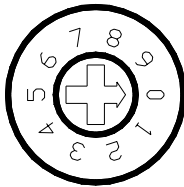
4.7. Impulse Transmission for more than two Timing Channels with RX-C10:

With the TdC 8000 and Timer S4 you can receive together with the RX-C10 from the TED-RX up to 10 different timing channels. Therefore you need different TED-TX. You can transmit a maximum of two timing channels per TED-TX. At each TED-TX you need to adjust the timing channels with code-switch (12).

You must notice, that each timing impulse blocks the transmitter and receiver for 0.1 seconds. A further impulse from another transmitter will be ignored during this time.

Timing Channel selection with Code-Switch (12) at the TED-TX:

You need to adjust the timing channel only at the TED-TX (transmitter). You need to adjust the timing channels with code-switch (12). Each switch position has two timing channels.



Set the switch with the small screw driver delivered together with the TED. The switch position is shown with the arrow. The ALGE setup is always on position 0 (e.g. picture to the left).

TED-TX Code-Schalter (12)	TED-TX timing channel banana socket green (5) and black (6)	TED-TX DIN-socket timing channel on pin 1	TED-TX DIN-Stecker timing channel on pin 2
switch position = 0	0	0	1
switch position = 1	1	1	2
switch position = 2	2	2	3
switch position = 3	3	3	4
switch position = 4	4	4	5
switch position = 5	5	5	6
switch position = 6	6	6	7
switch position = 7	7	7	8
switch position = 8	8	8	9
switch position = 9	0	0	2

e.g.: Timing with 10 timing channels on test slope for skiing:

A separate TED-TX is used for each timing channel (all together 10 TED-TX).

A Startgate is used for the start.

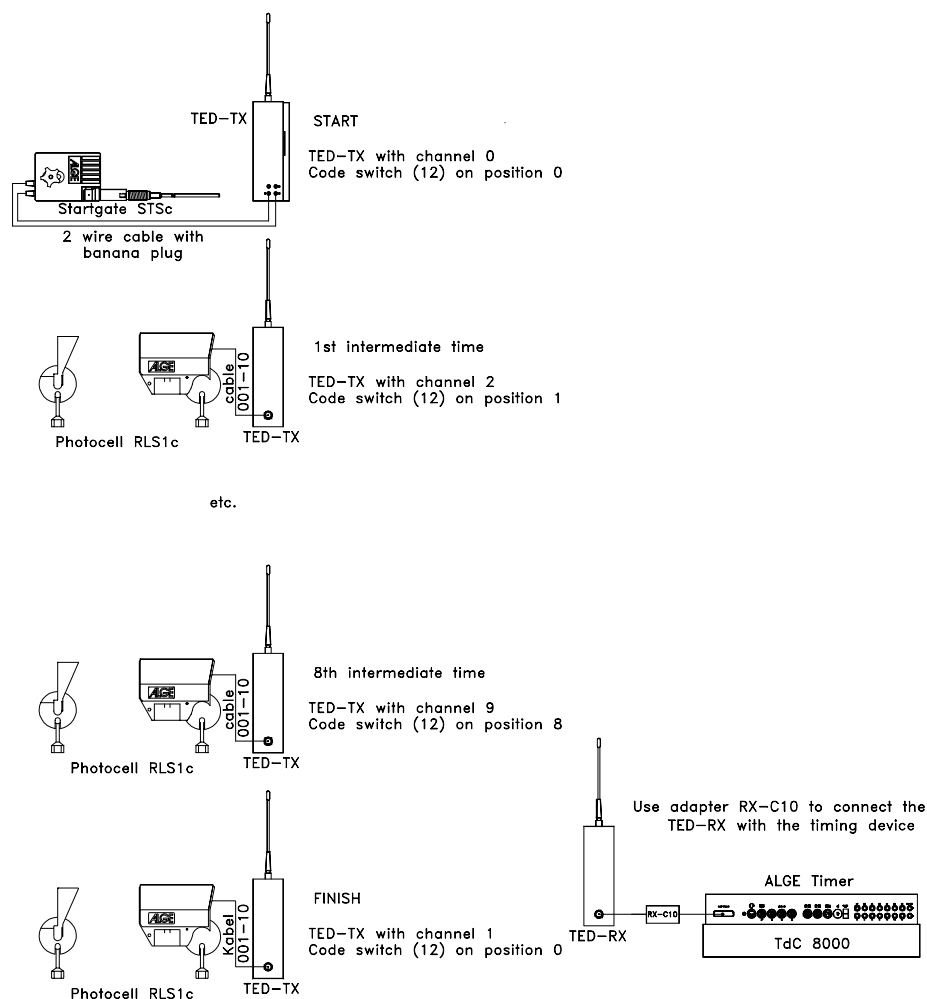
A photocell is used for the intermediate times and the finish.

A TdC 8000 is used as timer

Connect the RX-C10 at the TdC 8000 (connection "Multi Channel") and TED-RX.

The code-switch (12) of the TED-RX has no function (switch position does not matter).

Timing Channel	Function	Impulse Trigger	Switch Position Code-Switch (12)	Cable Type	Socket of TED-TX
C0	Start	Startgate	0	000-10	Banana Socket 5 + 6
C2	Intermediate Time 1	Photocell	1	001-10	DIN-Socket (7)
C3	Intermediate Time 2	Photocell	2	001-10	DIN-Socket (7)
C4	Intermediate Time 3	Photocell	3	001-10	DIN-Socket (7)
C5	Intermediate Time 4	Photocell	4	001-10	DIN-Socket (7)
C6	Intermediate Time 5	Photocell	5	001-10	DIN-Socket (7)
C7	Intermediate Time 6	Photocell	6	001-10	DIN-Socket (7)
C8	Intermediate Time 7	Photocell	7	001-10	DIN-Socket (7)
C9	Intermediate Time 8	Photocell	8	001-10	DIN-Socket (7)
C1	Finish	Photocell	0	001-10	DIN-Socket (7)



5. DATA TRANSMISSION

For what can you use the data transmission:

- data transmission from a ALGE timer to a ALGE display board
- data transmission from a Timer S4 to another Timer S4 (Program 0)
- data transmission from a ALGE timer to a Printer P4A
- data transmission from a ALGE timer to a Comet Parallel Display
- data transmission from a Comet Terminal to control a football (soccer) score board
- data transmission from a ALGE timer to a PC
- data transmission from a PC to a PC

Data Transmission Modes:

- *Data Transmission ALGE 1 Sec.:* one data string per second
- *Data Transmission ALGE 0.1 Sec.:* one data string per 0.1 seconds
- *Data Transmission 2400 Baud:* data transmission with control characters and 2400 Baud
- *Data Transmission 4800 Baud:* data transmission with control characters and 4800 Baud
- *Data Transmission Direct:* data transmission without protocol with 2400 or 4800 Baud

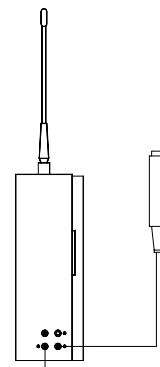
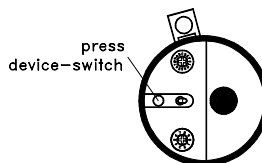
Repeat Data Transmission:

If you did not receive the last data string at the receiver, it is possible to repeat the data. The last data string is always stored at the TED-TX.

- press device-key (10) on TED-TX

or

- or press a hand switch connected at TED-TX.
(connected between green (5) and black (6) banana socket on TED-TX)



5.1. Data Transmission 1 Second:

Adjustment: set code-switch (12) of TED-TX on position 0

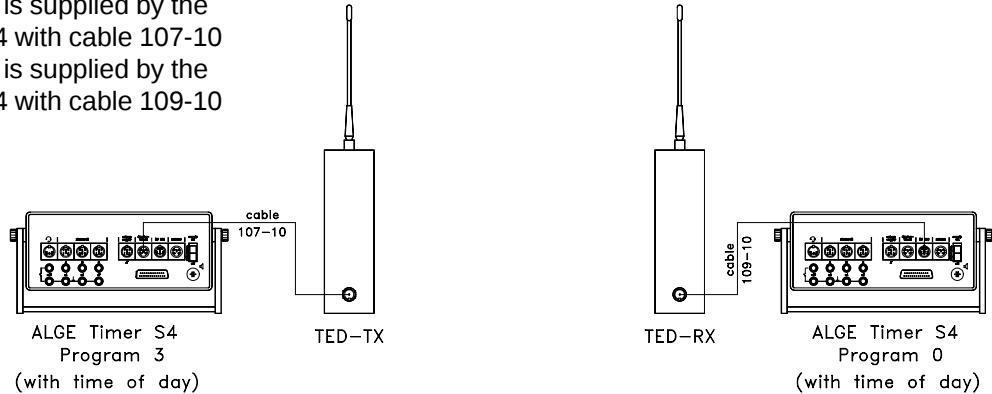
If the TED-TX receives a data string with ALGE protocol it switches automatically into mode data transmission 1 second. This mode sends each data string ten times with a check code. If the TED-RX receives the data string only once correct it sends it.

This mode is used if you need a high data safety between transmitter and receiver. You can only use this mode if data are not sent continuously. If you send continuously data (e.g. for display board with running time), it will miss some data.

5.1.1. Data Transmission from Timer S4 to Timer S4:

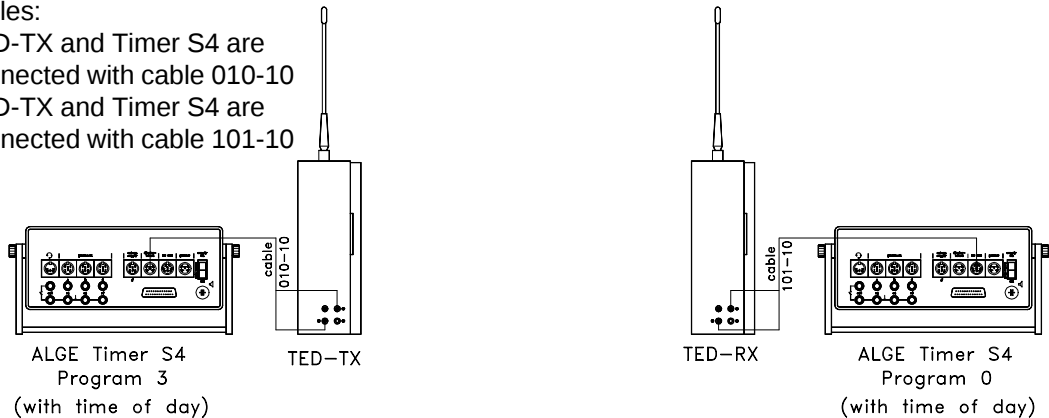
You can supply the TED-TX and TED-RX through the serial interface from the Timer S4

- TED-TX is supplied by the Timer S4 with cable 107-10
- TED-RX is supplied by the Timer S4 with cable 109-10



You can supply the TED-TX and TED-RX only through the internal batteries with the following cables:

- TED-TX and Timer S4 are connected with cable 010-10
- TED-RX and Timer S4 are connected with cable 101-10



Data transmission of a start time from a synchronized Timer S4 to another Timer S4.

- Use Program 3 for the Timer S4 at the start. You must input the timer of day:
 - > press yellow and red bottom at the same time
 - > the display shows "HP 0:00:00"
 - > Input the hours with the red button
 - > Input the minutes with the yellow button
- Use program 0 for the Timer S4 at the finish: You must input the time of day:
 - > press yellow and red bottom at the same time
 - > press again yellow and red bottom at the same time
 - > the display shows "SY 0:00:00"
 - > Input the hours with the red button
 - > Input the minutes with the yellow button
- Synchronize both Timer S4 with a start cable (channel 0)
- The display of the finish Timer shows the time of day
- Press yellow and red bottom at the same time to clear the display
- Program 0 works now as described in the S4 manual
- Carry the start Timer S4 to the start.

Repeat Data Transmission:

If you do not receive the start time at the finish timer, you can repeat the data transmission:

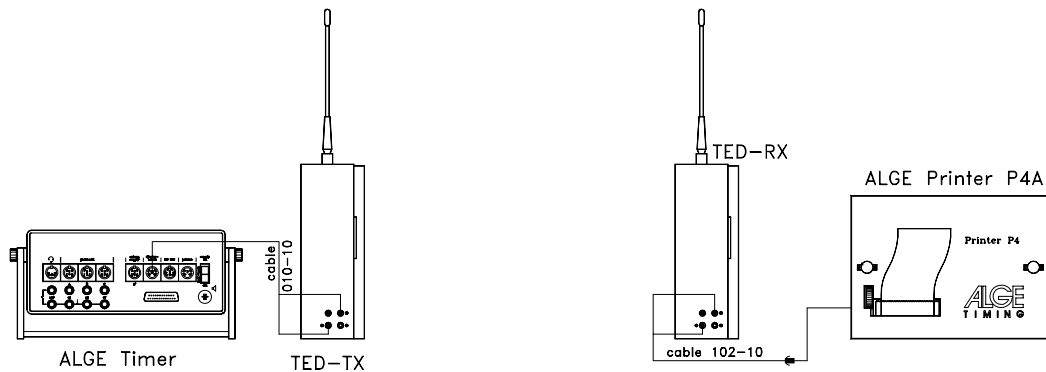
- press device-key (10) at TED-TX
- or press a connected hand switch (banana socket 5 and 6 of TED-TX)

5.1.2. Data Transmission from a ALGE TIMER to Printer P4A:

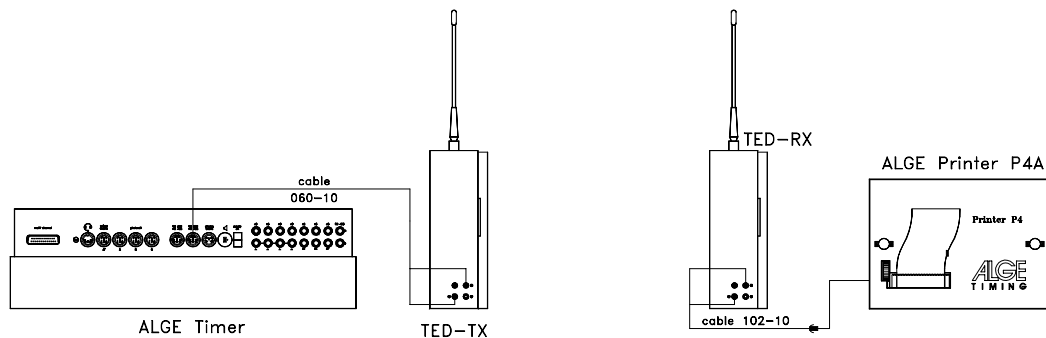
The data transmission from the timer to the printer can be made by radio. Therefore you can e.g. connect a second printer for the speaker.

If you use socket "display board" you need to use cable 010-10 between the timing device and TED-TX.

Attention: You must not transmit the running time. Rotate the DIN-plug 180° at the timer if incorrect.



If you use the socket "RS 232" of the timer, you need to use cable 060-10 between the timing device and TED-TX.



5.2. Data Transmission 0.1 Seconds:

Adjustment: Set code-switch (12) on position 1

Each data transmission of a data string from the TED-TX to the TED-RX happens once. Each data string has a check sum. If the TED-RX receives the data with the correct check sum it output the data. This mode allows to transmit ten data string per second.

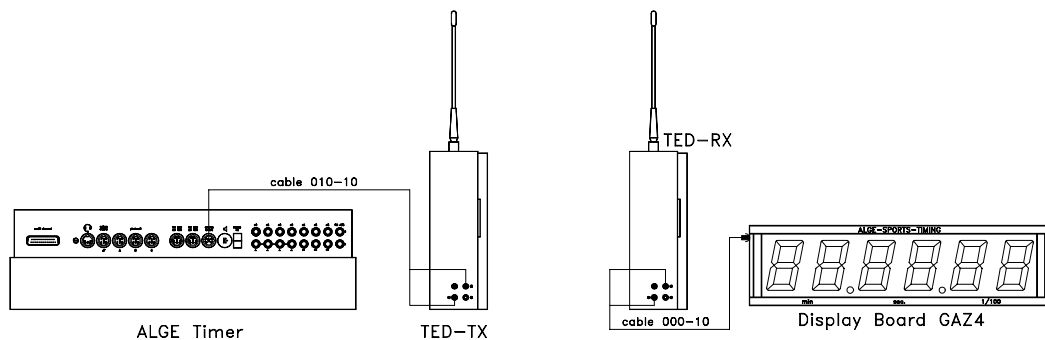
This Mode is used to have the transmitted data immediately present (delay of 0.1 seconds) or when you need to transmit a running time. The transmission safety is not as high as with the "data transmission 1 second".

5.2.1. Data Transmission from an ALGE Timer to an ALGE Display Board:

The timer controls the display board by radio.

With cable 010-10 the TED-TX will not be powered by the ALGE Timer.

With cable 000-10 the TED-RX will not be powered by the ALGE Display Board.

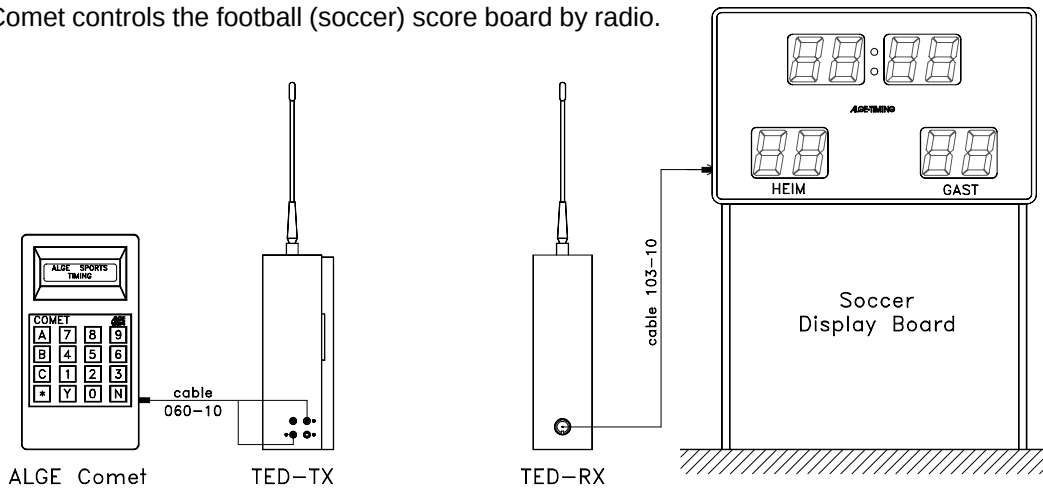


With cable 107-10 the TED-TX will be powered by the ALGE Timer.

With cable 103-10 the TED-RX will be powered by the ALGE Display Board.

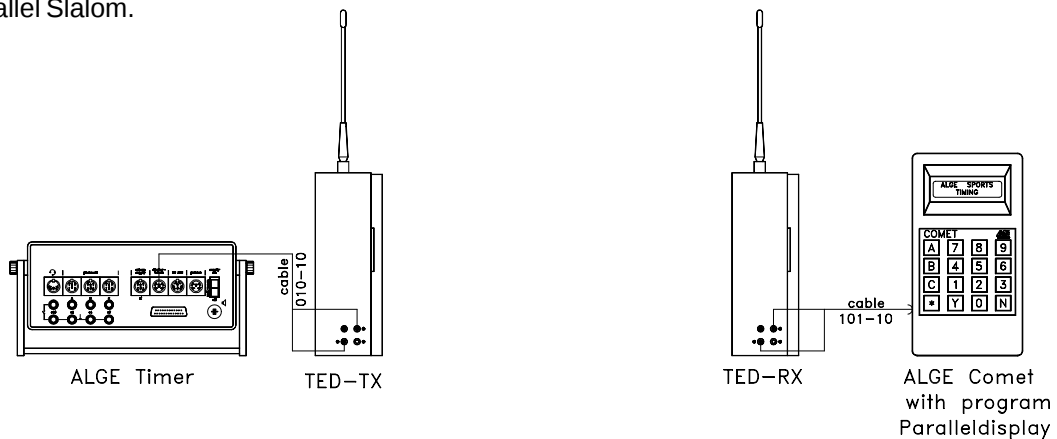
5.2.2. Data Transmission from a Comet to an ALGE Football Score Board:

The Comet controls the football (soccer) score board by radio.



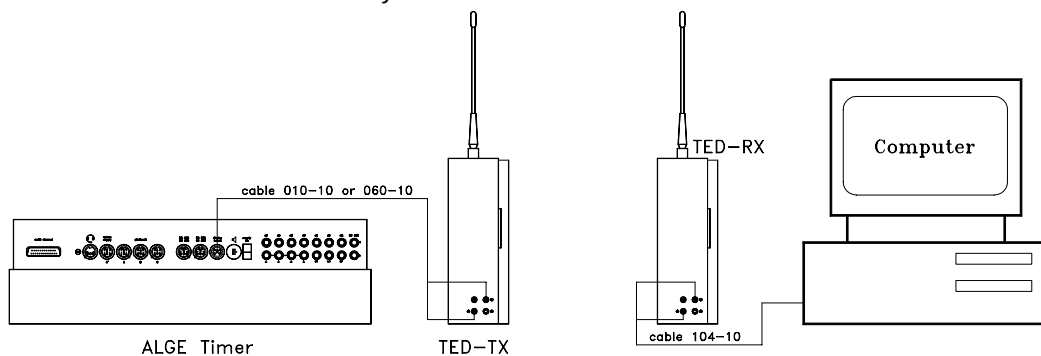
5.2.3. Data Transmission from an ALGE Timer to a Comet Parallel Display:

The Timer can send the timing data from the interface "display board" by radio to a Comet Parallel Slalom.



5.2.4. Data Transmission from an ALGE Timer to a PC:

The ALGE timer can send the data by radio to a PC.



Attention: The data transmission by radio is not as safe as by cable. If you transmit the data for the evaluation, you should check always if you received all data.

5.3. Data Transmission 2400 Baud:

Adjustment: Code-switch (12) from TED-TX and TED-RX on position 3.

Each data string must be sent with control characters at the begin and at the end. The control character at the begin turns the transmitter on, the control character at the end turns it off. If you do not send a control character at the end, the transmitter will turn off automatically 10 sec. after the last data was sent.

Start Control Character: 01 Hex. (minimum 10 times)
End Control Character: 04 Hex.

Advantage: This mode does save the battery of the transmitter (TED-TX), since the transmitter is only on when you send data. The data string between the start and end control character can have any protocol.

Disadvantage: Each data string needs a control character at the begin and end to turn the TED-TX on or off.

Operation: Wireless data transmission from one device to another (e.g. PC to PC).

5.4. Data Transmission 4800 Baud:

Adjustment: Code-switch (12) from TED-TX and TED-RX on position 4.

Each data string must be sent with control characters at the begin and at the end. The control character at the begin turns the transmitter on, the control character at the end turns it off. If you do not send a control character at the end, the transmitter will turn off automatically 10 sec. after the last data was sent.

Start Control Character: 01 Hex. (minimum 10 times)
End Control Character: 04 Hex.

Advantage: This mode does save the battery of the transmitter (TED-TX), since the transmitter is only on when you send data. The data string between the start and end control character can have any protocol.

Disadvantage: Each data string needs a control character at the begin and end to turn the TED-TX on or off.

Operation: Wireless data transmission from one device to another (e.g. PC to PC).

5.5. Data Transmission Direct:

Adjustment: Code-switch (12) from TED-TX and TED-RX on position 6.
Adapter 119--1 must be connected to TED-TX (short-cut between pin 2 and 3 at DIN socket (7)).

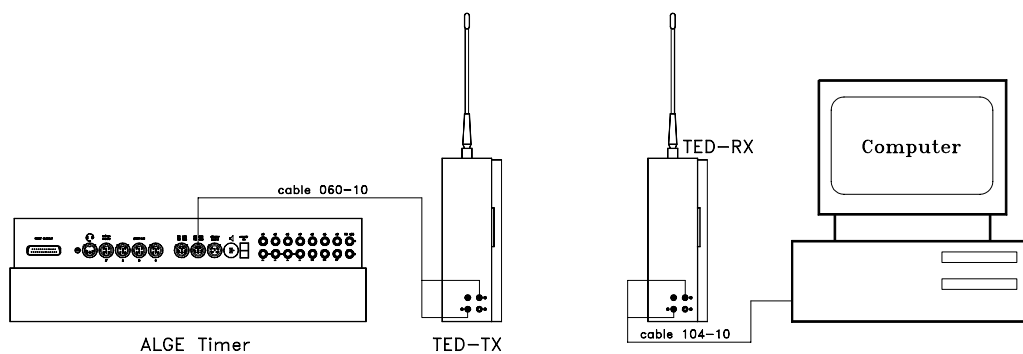
Each data string must be sent with 2400 or 4800 Baud. You do not need any control characters. The transmitter (TED-TX) is always on, this means a net device (NLG8) is recommended.

Data will not be checked by the receiver (TED-RX), but as they are received forwarded to the plugged device. The device that receives the data should check the data (e.g. PC).

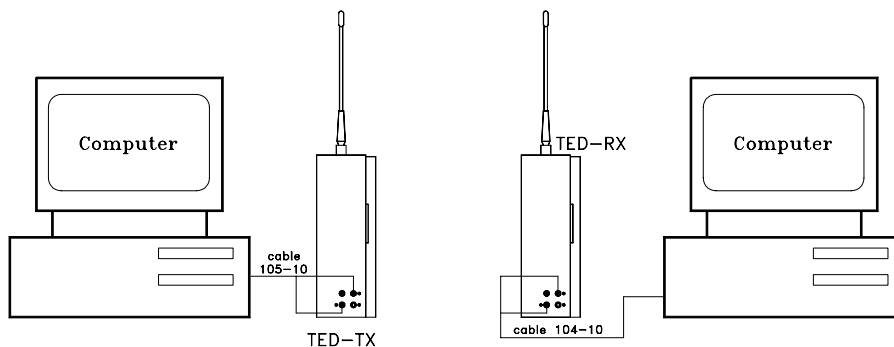
Advantage: Each data string will be sent, you must not keep a certain format. You do not need control characters.

Disadvantage: The TED-TX has a high power consumption, since it is always on. Since the data are not sent with a protocol it is not possible to check them at the TED-RX.

Operation: Wireless data transmission without data protocol from one device to another (e.g. PC to PC).



ALGE TdC 8000 transmits data to a PC through the RS 232 interface



PC transmits data to another PC

Attention: You must use adapter 119--1 in this mode!

6. TECHNICAL DATA

Frequency:	Standard:	433,500 MHz
	Optional:	from 433,050 to 434,790 MHz (in the 70 cm Band)
RF Output Power:	TED-TX10	10 mW
	TED-TX400	400 mW
Reach:	TED-TX10	about 1,5 km
	TED-TX400	about. 5 km
Impulse Input TED-TX:	active low, min. 10 ms, double impulse protection time about 50 ms	
Impulse Output TED-RX:	active low, 100 ms	
Power Supply:	external:	TED-TX10 and TED-RX: +6,5 to 28 Volt DC
		TED-TX400: +9 to 15 Volt DC
	internal:	6 x Alkaline Batteries 1,5 V (type AA) or
		6 x NiCd Rechargeable Batteries 1,2 V (type AA)
Power Consumption:	TED-TX10:	in Transmission Mode: about 35 mA
		in Stand-by Mode: about 3 mA
	TED-TX400:	in Transmission Mode: about 300 mA
		in Stand-by Mode: about 3 mA
	TED-RX:	Normal Mode: about 35 mA
		Test Mode: about 70 mA

Working Time: Table for use with Alkaline Batteries (Type Energizer) at 25°C (77°F):

TED-TX10	without photocell	1 impulse per minute	about 300 hours
TED-TX10	with photocell	1 impulse per minute	about 66 hours
TED-TX10	---	1 data transmission per minute	about 270 hours
TED-TX10	---	continues data transmission	about 54 hours
TED-TX400	without photocell	1 impulse per minute	about 270 hours
TED-TX400	with photocell	1 impulse per minute	about 60 hours
TED-TX400	---	1 data transmission per minute	about 54 hours
TED-TX400	---	continues data transmission	about 6 hours
TED-RX	---	in all equal	about 54 hours

Table for use with NiCd batteries (Type Panasonic 700m Ah) at 25°C (77°F):

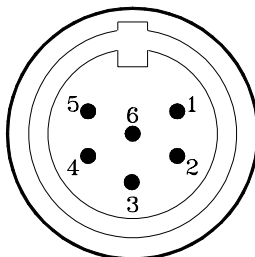
TED-TX10	without photocell	1 impulse per minute	about 100 hours
TED-TX10	with photocell	1 impulse per minute	about 22 hours
TED-TX10	---	1 data transmission per minute	about 90 hours
TED-TX10	---	continues data transmission	about 18 hours
TED-TX400	without photocell	1 impulse per minute	about 90 hours
TED-TX400	with photocell	1 impulse per minute	about 20 hours
TED-TX400	---	1 data transmission per minute	about 18 hours
TED-TX400	---	continues data transmission	about 2 hours
TED-RX	---	in all equal	about 18 hours

RS-232c Interface (for TED-TX and TED-RX):

Input-/Output format: 1 Start Bit, 8 ASCII Bit, no Parity-Bit, 1 Stop Bit
 Transfer Speed: 2400 Baud
 Pin Connection: see below

Connections:
TED-TX DIN socket:

- 1 Impulse input (Start)
- 2 Impulse input (Stop)
- 3 Ground
- 4 Input , external supply
- 5 Output +5 Volt stabilized
- 6 Data input


TED-RX DIN socket:

- 1 Impulse output (Start)
- 2 Impulse output (Stop)
- 3 Ground
- 4 Input, external supply
- 5 empty
- 6 Data output

Banana Sockets:

- with yellow mark (4) Data (same as DIN-socket PIN 6)
- with green mark (5) Impulse (same as DIN-socket PIN 1)
- with black mark (6) Ground (same as DIN-socket PIN 3)

Antenna: TED-TX10: 1/4 antenna, about 165 mm
 TED-TX400: BNC socket for antenna
 TED-RX: 1/4 antenna, about 165 mm

Working Temperature range: -20 to +50°C (-4 to 122 F)

Weight: without batteries: with batteries:
 TED-TX10: about 600 g about 750 g
 TED-TX400: about 600 g about 750 g
 TED-RX: about 600 g about 750 g

Measurements:
