



Huvudsponsor



**SVENSKA
SPEL**

TIDTAGNINGSPUTBILDNING FIS

28 OKTOBER 2025



AGENDA

- Nyheter FIS Tidtagning
- Synkronisering
- Handtidtagning
- EET Calculation
- Timing Report
- Trådlös Tidtagning
- SSF Timing
- Utrustning: Leverantörer, produkter





NYHETER FIS TIDTAGNING

611.2.1 Electric Timing

For all international competitions, FIS World Cup, FIS Continental Cups and FIS competitions, two synchronised electronically isolated timing systems operating in time-of-day must be used. One system will be designated system A (main system), the other system B (back-up system) prior to the beginning of the race. Only exception for Parallel competitions, on Level 2, 3 and 4 where no system B is required.

Time of day times must be immediately and automatically sequentially recorded on printed strips **(for level 3 and 4, memorized electronically is accepted)** at the maximum precision of the timing device according to the requirements for homologation. The final result is calculated by subtracting the start time from the finish time for each skier's run and is then expressed to 1/100th (0.01) precision by truncating the calculated net time on course.

All times used for the final result must be from system A. If there is a failure of system A, a calculated net time from system B must be used following the same procedure as set out in art. 611.3.2.1. It is not permitted to substitute time-of-day times from system B for use with system A for the purpose of net time calculations. For all events, system A must be connected to its respective start gate contact. System B must be separately connected to another electronically isolated start gate contact.

Refer to the FIS Timing Booklet for more details regarding cabling and complete wiring descriptions, diagrams and start gate installations. All timing equipment and technical installation should be set up or protected in such a way that danger to the competitors is avoided where possible. Synchronisation of the timing systems must occur as close as possible to the scheduled start for the first run of the day.

Synchronisation of all systems must be maintained throughout each run. Timers must not be re synchronised during any run.





NYHETER FIS TIDTAGNING

612.4 The Chief Timekeeper

The chief timekeeper is responsible for the accuracy of the timing and synchronises the watches with the starter as shortly before and after the race as is possible. The chief timekeeper must publish unofficial times as quickly as possible (on the scoreboard, etc.). If the electric timing fails, the chief timekeeper must communicate immediately with the start referee and the TD, **the equivalent electronic time report (see data booklet) must be prepared. The Jury must control and approve it. The report may also be shown to the representative of the nations concerned.**

613.4 Start Signals

If possible, a start clock with an automatic audible signal is to be used (art. 611.2.1.3). The starter will let the competitor see the start clock.

If a start clock is not used, 10 seconds before the start, the starter will tell each competitor "10 seconds". Five seconds before the start, the starter should count "5, 4, 3, 2, 1" and then give the start command "Go". (For Slalom see art. 805.3).

805.3 Start Signal

As soon as the order for the next start is received, the starter gives the competitor the warning "Ready", "Attention", "Achtung" and a few seconds later the start signal "Go! Partez! Los!". The competitor must start within about 10 seconds after this order.



SYNCHRONIZATION

All elements of the timing installation, must be installed and be in good working order at least one hour before the beginning of the competition.

System A and B synchronisation to local Time of Day (ToD) must occur prior to the announced start of the 1st (or only) run and come from one single source impulse for all timing devices. One minute after synchronization is done, an impulse must be sent by the same single source to check Time of Day synchronisation accuracy on Systems A and B. The maximum allowed difference between system A and B after one minute since initial synchronisation is 0.001 seconds. Discrepancies observed that are greater than 0.001 after one minute require the synchronization to be redone and checked again prior to the start of the 1st or only run. Start Clocks, manual hand timing and any other timing devices must be synchronised with system A and B timers prior to the run.



```
CHRONOPRINTER 540
N° 1686 V.D-06

DATE <DMY> 18/10/19
TIME <HMS> 09:21:07

MEMORY FREE 23876
*****
PTB SEQUENTIAL 1-4
PRECISION 1/100000 SEC
INPUT 1 LOCK TIME 1.00 S
INPUT 2 LOCK TIME 1.00 S
INPUT 3 LOCK TIME 0.10 S
INPUT 4 LOCK TIME 0.10 S
RS232 -> PC
BAUDS RATE 9600
ETHERNET OFF
*****
ENTER THE MENU -> F

.....
MEMORY CLEARED
MEMORY FREE 25000
.....
SYNCHRO AT 09:23:00
DATE <DMY> 18/10/19
1 9:24:00.59671
```

```
CHRONOPRINTER 545
N° 4893 V.B-13

DATE <DMY> 18/10/19
TIME <HMS> 09:16:10

MEMORY FREE 29748
*****
PTB SEQUENTIAL 1-4
PRECISION 1/10000s
INPUT 1 LOCK TIME 0.10s
INPUT 2 LOCK TIME 0.10s
INPUT 3 LOCK TIME 0.10s
INPUT 4 LOCK TIME 0.10s
RS232 -> PC
BAUDRATE 9600
*****
ENTER THE MENU -> F

.....
MEMORY CLEARED
MEMORY FREE 30000
.....
SYNCHRO MANUAL
TIME <HMS> 09:23:00
DATE <DMY> 18/10/19
1 9:24:00.5967
```

SYNCHRONIZATION

Om en åkare som ska användas i Timing Reporten blir diskad efter sitt åk kan man ta nästa med en godkänd tid till Timing Reporten.

Om man kör dam och herrtävling samma dag och kör båda klassernas åk 1 först och sedan åk 2 ska man bara synkronisera före första klassens åk 1.

Börjar man t.ex. med damer synkar man före deras första åk men sedan behöver man inte synka före herrarnas första åk.

Kör man tävling för tävling så att man t.ex. kör klart damtävlingen före herrtävlingen ska man synka före båda klassernas första åk.



15.1.1. Timers with Permanent External Synchronisation

For timing devices with permanent external synchronisation (e.g. GPS-Synchronisation) all specifications of “Timers” (see previous page) are valid. Additionally it must fulfil the following features:

- The permanent external synchronisation solution must have a constant accuracy from 0.0001 s or better.
- The timing device must run independent with the internal quartz.
- The time synchronisation of the external device can be in periodic intervals or permanent.
- If the difference between the internal timing (quartz) and the external synchronisation is within an accuracy of ± 0.0003 seconds it is allowed to resync the timing device with the external time.
- If the difference between the internal time (quartz) and the external time is higher than ± 0.0003 seconds it is not allowed to resync the timer with the external time. From now on the timing device must run with the internal quartz only (no further resynchronisations are allowed).
- The printer of the timer must print a message when the permanent external synchronisation is switched off. The message must inform about the reason for switching the permanent external synchronisation off and the time when this happens.
- In case the permanent external synchronisation signal is lost the timer has to print it a message. If the timer gets the synchronisation signal again further synchronisation is allowed, if the time difference is within the allowed ± 0.0003 seconds.



HANDTIDTAGNING

611.2.2 Hand Timing

Manual (hand) timing, completely separate and independent of the electronic timing, must be used for all competitions listed in the FIS Calendar. Stopwatches or hand operated battery powered timers that are installed at both the Start and the Finish and capable of expressing the time of day to at least 1/100th (0.01) precision qualify as proper hand timing devices. They must be synchronised prior to the start of the first run, with the same time-of-day as system A and system B (see art. 611.2.1). Printed records, either automatic or hand-written) or memorised electronically, of recorded hand times must be immediately available at the start and at the finish.

611.3.2.1 Utilisation of times taken by hand

Hand times may be used in the official results after a correction has been calculated.

Calculation of the correction:

Subtract the electronic time from the time taken by hand for the 10 competitors starting before the missing time. If there are not 10 times before, complete the calculation with the remaining times after the missed time.

The sum of the 10 time differences is divided by 10 and rounded up or down (0.044 -> 0.04, 0.045 -> 0.05) to give the correction which must be applied to the hand time of the competitor without an electronic time.

Missed Time

A missed time is a time of day that is not shown on the printed tape of the system A timer. If a time from system B is missed but you have it printed on system A it is not considered as a missed time.

In case you have a missed time of system A and must replace it by time of day of system B or of a hand time, then you have to recalculate the missed time of day using ICR-rule 611.3.2.1.





HANDTIDTAGNING



START NYHETER LANDSLAG KLUBBHÖRNAN UTBILDNING TÄVLING MARKNAD KONTAKT

Nationella TD

Anmälningsavgifter

Tips till förening & arrangör

Regler Alpint

Stomprogram

Arrangör Lilla Världscupen

SSF Timing



SSF TA Tävlingsystem

För åkare



Internationellt



Mästerskap



Regler & säkerhet



Sändningsrättigheter

Tävlingskalender & stomprogram

Tips till förening & arrangör

Nedan hittar du tips och dokumentation till föreningar och tävlingsarrangörer.

ORGANISATIONEN	BACKEN	TIDTAGNING	DOKUMENT	SJUKVÅRD
Nu ska vi ha tävling (pdf, 813.9 kB)	Manual hasning (pdf, 527.8 kB)	EET Calculator v2 för uträkning av B- eller handtid (xslm) (klarar 1/10'000) (xslm, 59 kB)	Portdomarkor (xls, 115.5 kB)	Sjukvård (xlsx, 152.4 kB)
Nu ska vi ha tävling ppt (pptx, 470.7 kB)	Guide till säkerhets-nät (pdf, 323.4 kB)	EET Calculator v4 för uträkning av B- eller handtid (xslm) (klarar 1/100'000) kräver 64 bitars Excel (xslm, 60.1 kB)	Protest (xlsx, 152.8 kB)	Säkerhetspolicy (docx, 16.6 kB)
Checklista lagledarmöte (xlsx, 151.9 kB)		Lathund tidtagning LVC-finaler (pdf, 139.6 kB)		
Tävlingsorganisation (xls, 33.5 kB)		Lathund tidtagning USM (pdf, 157.2 kB)		
Tidsprogram (xls, 52.5 kB)		Lathund Live SSF Live Resultat (pdf, 225.9 kB)		
Checklista tävlingssekretariat (pdf, 435.4 kB)		Tidskalkyl för tävlingens genomförande (xlsx, 23.8 kB)		

ANVÄND EET Calculator Excelfil som finns på <https://www.skidor.com/idrotter/alpint/tavling/info-akare--arrangor/for-arrangorer/tips-till-forening--arrangor-i-tva-varianter.v2-som-klarar-1/10'000-och-v4-som-klarar-1/100'000-kräver-64-bitars-Excel>

EET Calculation

The EET (Equivalent Electronic Time) you need in case a time from system A is missing. All times used for the final result must be from system A. If there is a failure of system A, a calculated net time (EET) from system B must be used following the same procedure as shown below. It is not permitted to substitute time-of-day times from system B for use with system A for the purpose of net time calculations. If the time is not available from system B use the photo finish time (if available), otherwise hand time.

Calculation of the correction:

To calculate the correction time, use the 10 times of day of the competitors started before the one with the missing time. If there are not 10 times before, complete the calculation with the remaining times after the missed time.

Subtract the A system times from the back up times for these 10 competitors. In case of parallel events, this can be less than 10 times and the qualification and the finals times must be not used together.

The sum of the 10 calculated time differences (in case of parallel events, the times per course should be considered) is divided by 10 and rounded up or down ($0.0444 = 0.044$, $0.0455 = 0.046$). This correction time must be added or subtracted to the replacement time of the competitor without a system A time.

The EET calculation must only use time of day precision to a minimum 1/1000th for the correction value of the time of day. If Hand timing is only available to precision of 1/100th, the full precision of 1/1000th or better must be used for the system A times.

Electronic A Finish Time in TOD: 10:48:31.9781 Hand Timing: 10:48:31.86(00)

Rounding for EET-Time Calculation (*):

$1.1575 / 10 = 0.11575 \Rightarrow 0.1158$
(rounding up for 5 or higher)

$1.1574 / 10 = 0.11574 \Rightarrow 0.1157$
(cutting below 5)



13.2. EET Calculation - Example if System A and Backup Time has the precision of 1/10000th

BIB	Time of Day System B or Manual Time	Time of Day System A	Time Difference	Explanation
1	10:00:50.3548	10:00:50.1292	0.2256	time difference of BIB 1
2	10:01:52.0189	10:01:52.1921	-0.1732	time difference of BIB 2
3	10:02:49.4978	10:02:49.4920	0.0058	time difference of BIB 3
4	10:03:50.6148	10:03:50.9812	-0.3664	time difference of BIB 4
5	10:04:49.2741	10:04:49.8729	-0.5988	time difference of BIB 5
6	10:05:50.4702	10:05:50.5129	-0.0427	time difference of BIB 6
7	10:06:48.9125	10:06:48.8615	0.0510	time difference of BIB 7
8	10:07:51.5814	missingtime	0.0000	missingtime
9	10:08:49.8751	10:08:50.0002	-0.1251	time difference of BIB 9
10	10:09:49.2459	10:09:49.4278	-0.1819	time difference of BIB 10
11	10:10:50.3954	10:10:50.3473	0.0481	time difference of BIB 11
8	10:07:51.5814	missingtime	-1.1576	sum of above time differences
Calculate Correction Time			-0.11576	$-0.11576 = 1.1576 / 10$
Correction Time after Rounding*			-0.1158	
Calculate EET Time: Source Time - Correction Time				
8	10:07:51.5814 - (-0.1158) = 10:07:51.6972			
EET for Bib 8		10:07:51.6972		

TIMING REPORT

At the end of the competition, it is compulsory to send electronically the “Timing & Data Technical Report Form” to FIS (see section Timing & Data Technical Report Form in this booklet). The printed tapes from the System A, System B and all hand timing records must be handed to the race organization who has to keep it at least 3 months after the competition or after any appeal dealing with timing.

Timing Report K1.0

Timing and Data Technical Report Alpine

WC - World Cup Super G Men for codes S2

Accepted languages for report content: English, French, German

1

2

3 NEW VERSION available

Event data

FIS Discipline: Alpine

Season: 2019

Location: Val Gardena-Croden

Nation: ITA

Event Name: S1. SAGLONC CLASSIC

Competition Date: 14.12.2018

Competition Codes: S2

Category: WC - World Cup

Event: Super G

Gender: Men

Technical Delegate

Last Name: Dreacchi

First Name: Edi

Nation: AUT

ID Number: 900

Chief of Timing and Calculation

Last Name: Howard

First Name: Matt

Nation: USA

Telephone: 803-387-9889

Email: matt.p.timing@gmail.com

Timekeeper

Company: P1 Timing

Last Name: Howard

First Name: Matt

Nation: USA

Telephone: 803-387-9889

Email: matt.p.timing@gmail.com

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Timing Report K1.0

Timing and Data Technical Report Alpine

WC - World Cup Super G Men for codes S2

Accepted languages for report content: English, French, German

Synchronization

System A (2d Finish)

System B (2d Finish)

Hand

Timer A Start

Timer B Start

Synchronization time

08:40:00

08:40:00

08:40:00

Synchronization confirmation

08:40:00.1335

08:40:00.1334

08:40:00.1341

08:40:00.1337

Timing Part 1

Time at day (UTC) expressed in seconds used for net time calculations (valid for the whole of the timing device)

Select run used: 2 runs

1st Run

System A	System B	Hand	System A	System B	Hand
09:26:13.9400	09:26:13.9413	9:26:13.90	09:26:13.9400	09:26:13.9413	9:26:13.90
09:27:24.2100	09:27:24.2080	9:27:24.20	09:27:24.2100	09:27:24.2080	9:27:24.20
Net time System A/BB First	1:10.25	11	1:10.25	11	
Start TOD Last	10:25:28.5058	10:25:28.5000	10:25:28.5058	10:25:28.5020	10:25:28.55
Finish TOD Last	10:26:46.2841	10:26:46.2845	10:26:46.2841	10:26:46.2858	10:26:46.25
Net time System A/BB Last	1:17.72	86	1:17.70	82	
Net time System A/BB Best	1:03.02	5	1:03.00	5	

2nd Run

System A	System B	Hand	System A	System B	Hand
09:26:13.9400	09:26:13.9413	9:26:13.90	09:26:13.9400	09:26:13.9413	9:26:13.90
09:27:24.2100	09:27:24.2080	9:27:24.20	09:27:24.2100	09:27:24.2080	9:27:24.20
Net time System A/BB First	1:10.25	11	1:10.25	11	
Start TOD Last	10:25:28.5058	10:25:28.5000	10:25:28.5058	10:25:28.5020	10:25:28.55
Finish TOD Last	10:26:46.2841	10:26:46.2845	10:26:46.2841	10:26:46.2858	10:26:46.25
Net time System A/BB Last	1:17.72	86	1:17.70	82	
Net time System A/BB Best	1:03.02	5	1:03.00	5	

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Timing Report K1.0

Timing and Data Technical Report Alpine

WC - World Cup Super G Men for codes S2

Accepted languages for report content: English, French, German

Timing Devices

Brand / Company	Model	Serial number	Homologation		
System A Timer (2d Finish)	DIGITECH	MASTER 3	5967456	DIG 097.14	✓
System B Timer (2d Finish)	ALGE	TDC 8201	54040386	ALG 0137.10	✓
Timer A Start (2d Start)	ALGE	Timy3 V2	536405	ALG 089.14	✓
Timer B Start (2d Start)	TAG HEUER	Splitmaster HL 850	123495	TAG 201.02	✓
Start device	TAG HEUER	HL7-1	42342342	TAG 954.23	✓
Start Clock / Keep	ALGE	Salec	0880980		
Timer Cable A	ALGE	PR14	100863.051	ALG L747.09	✓
Timer Cable B	ALGE	PR14	100863.052	ALG L747.09	✓

Connection to start device (cable, radio or other)

System A: Cable

System B: Cable

Volocom

System A not used (enter the reason)

System B not used (enter the reason)

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Timing Report K1.0

Timing and Data Technical Report Alpine

WC - World Cup Super G Men for codes S2

Accepted languages for report content: English, French, German

Timing Part 2

Were all results from system A? ☐ Yes ☒ No

Did any or all ID numbers used in the results belong to any system other than system A in all runs (Indicate run)

BB Run Reason Other reasons Data source for replacement system A time?

BB	Run	Reason	Other	Data source for replacement system A time?
21	1	PhotoCell alignment		Core Source System B

Comments run 1

nothing show

Will cables and timing and calculations of this event be added to the FIS index? ☒ Yes ☐ No

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TRÅDLÖS TIDTAGNING

5. Timing without Cable Connection between Start and Finish

FIS Timing Working Group recognizes the importance of allowing emerging and technically responsible technologies to be used in modern FIS competitions. For this reason, and because of the flexibility that it affords, FIS Level 3 and 4 competitions may use timing solutions that do not require any hard wire connection between start and finish for either A and/or B systems. **Level 2, 1 and 0 competitions are not allowed to use this solution, this could be only permitted in situations of force majeure.**

The FIS does not homologate wireless timing technology for use in FIS skiing events. The FIS certifies timing equipment (timers, start gates, photocells, other devices) for use with hard-wired connections between start and finish locations as a general standard.

Regardless of the technology being used, every solution without hill cable must include the use of homologated timers operating in synchronized Time-of-Day with active printers or data memory. Systems will be represented by homologated timer(s) at the start and homologated timer(s) at the finish. Please refer to the set-up diagram that illustrates the correct use of this technique.

All timing rules remain in force in this situation (set-up, synchronisation, time-of day precision, printing, hand timing). **In addition, for race results to be valid the TD must gather and submit to FIS all timer printer tapes or data memory with the Timing Technical Report Forms.** The "no-wires" aspect of this technique provides the time-of-day start times and the time-of-day finish times from the separate, synchronized timing devices. **In all cases the start and finish sensors must still be connected to the start and finish timers using hard-wire connections.**

The Chief of Timing must make sure that all wireless solutions adopted work in the physical environment of the start and finish regardless of the weather conditions and temperature.





TRÅDLÖS TIDTAGNING

This allows race organizers to use many types of timing solutions without wires as long as these timers are in place and are used to verify the results.

If times are generated by a timing solution other than system A or B in all cases these times must be checked against system A and must match exactly. In case results deviate from system A, the competition must be evaluated on the A system times as per the normal timing set-up rules and procedures.

When a radio system with impulse transmission is used, the accuracy must be consistent within +/- 1/1000 second. The accuracy must be clearly described in the manual of the radio system. FIS rules must be applied, if a time from system B is used.

In practice the timing-without-wires solution must consider how to prove that times from all start and finish sensors are valid in the Time-of-Day ("ToD") methods normally used.

Thus, ANY additional wireless solution from ANY manufacturer that allows for comparison to these ToD start and finish times (recorded and preserved at each homologated timer) could be used. How the wireless transmission is achieved (impulse, data, GPS, Network, voice, paper) is open for use, but it must be able to match the ToD proof captured on the homologated devices at start and finish in ToD.

In all cases where no-wire solutions are used the timing tapes or data memory files must be sent with the results to the FIS. A description of techniques that demonstrate how the calibration issues between the time bases are dealt with over runs is also essential to be provided to FIS, since synchronization could be an important element as evidence.

In all cases where wireless equipment will be used, it is highly recommended that Race Organizers or assigned FIS Technical Delegates check with a member of the FIS Timing Working Group in advance of the competition to describe the intended wireless equipment set-up and to verify test data.

Please refer to the set-up diagram that illustrates the correct use of this technique.



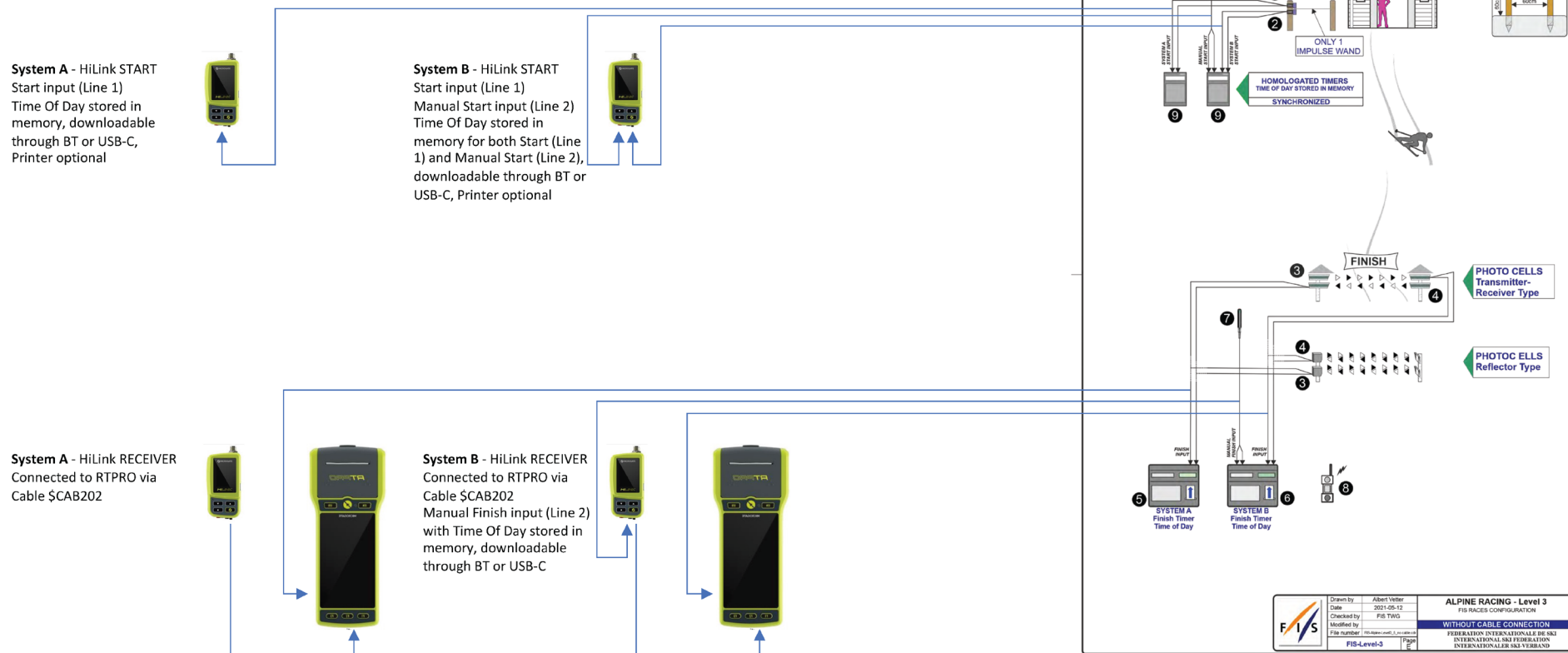
EXEMPEL TRÅDLÖS SET UP

Här ser ni ett
exempel på hur en
trådlös tidtagning för
FIS-tävlingar kan se
ut.



FIS Level 3 - Wireless solution proposal for Microgate

- Microgate or free of choice homologated startgate and photo cells
- Two HiLink "Start" for System A and B, manual start hand time stored in memory or printed
- Two HiLink "Receiver" for System A and B at timing office, connected to RTPRO for registration of start impuls and manual finish
- Two RTPRO timers for System A and B at timing office with System A and B finish photo cells direct connected
- This proposal should conform with FIS regulation from TIMING BOOKLET



Design of proposal made by Mattias Österberg, Sweden, +46 72 5098894

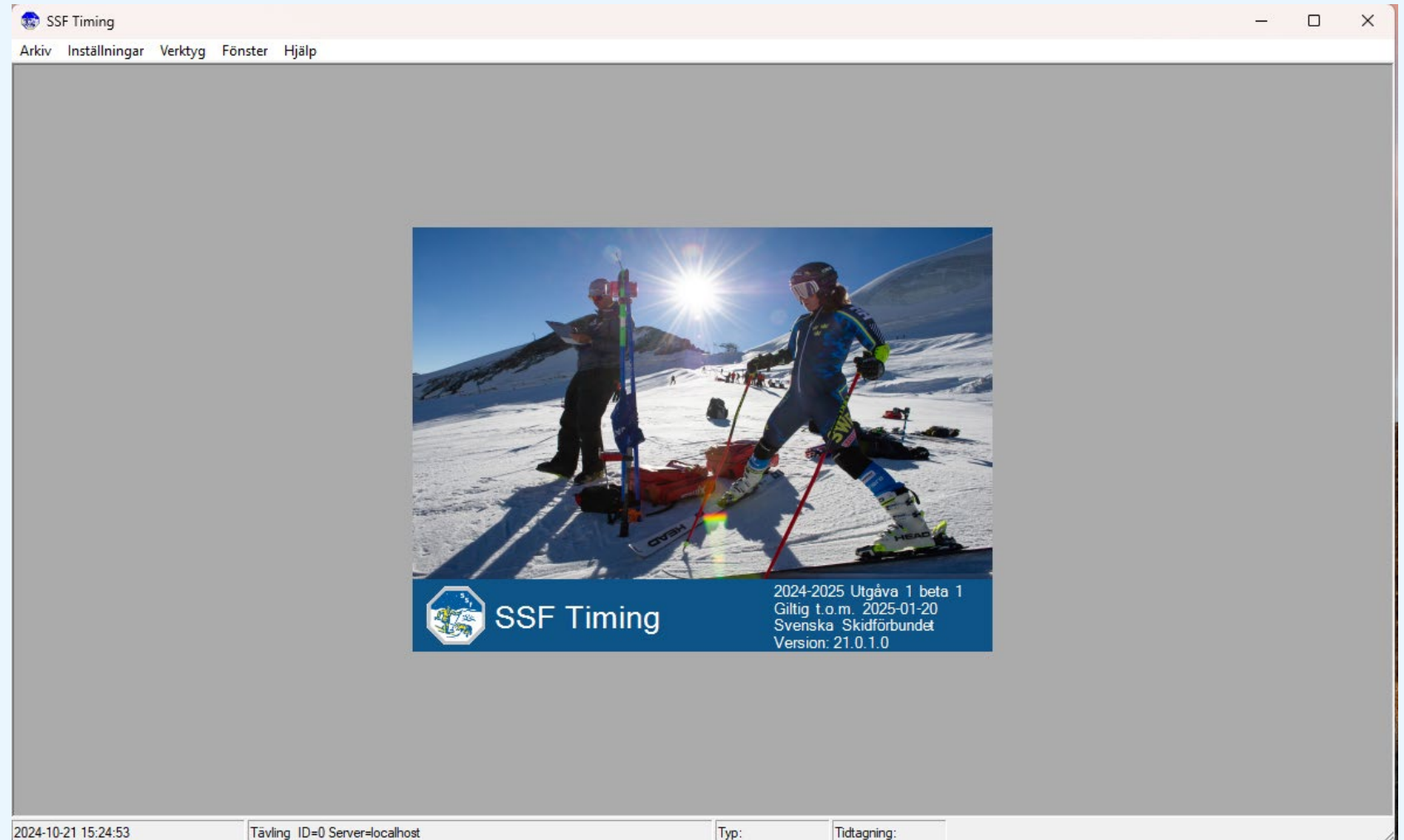
Version 2.62
2023-10-02

FIS Headquarters, Marc Hodler House, Blochstrasse 2, CH-3653 Oberhofen am Thunersee, Switzerland
FIS IT department | +41 (33) 244 61 61 | it@fis-ski.com | www.fis-ski.com

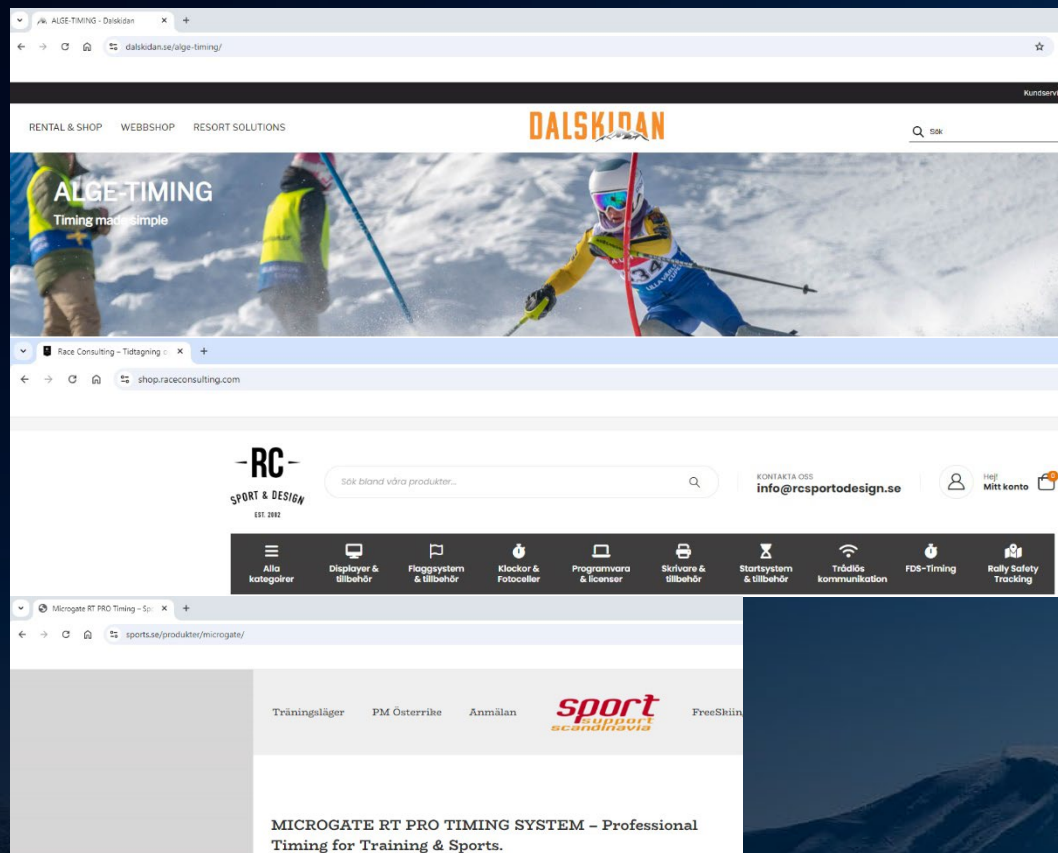
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SSF TIMING

- SSF Timing är ett Windows-program utvecklat av Svenska Skidförbundet för tidtagning på tävlingar. Det har stöd för alpint, längdåkning, skicross, speedski och skidskytte.
- Programmet får användas av föreningar som är ansluta till Svenska Skidförbundet eller Svenska Skidskytteförbundet.
- SSF Timing är anpassat till SSF:s tävlingsadministrativa system (SSF TA) och kan importera anmälningsfiler från och ladda upp resultatfiler till SSF TA.



LEVERANTÖRER



- Dalskidan - <https://dalskidan.se/alge-timing/>
- Race Consulting - <https://shop.raceconsulting.com/butik/>
- FDS Timing & TAG HEUER Timing
- Sport Support Scandinavia - <https://www.sports.se/produkter/microgate/>
- MICROGATE Timing
- Dala Storbild - <https://dalastorbild.nu/>
- FLEXLED & EMIT



UTRUSTNING

- Dalskidan - <https://dalskidan.se/alge-timing/>
ALGE Timing
Klockor, Startgrindar, Fotoceller, Displayers, Trådlöst, Headset, Startklockor och diverse tillbehör
- Race Consulting - <https://shop.raceconsulting.com/butik/>
FDS Timing & TAG HEUER Timing
Klockor, Startgrindar, Fotoceller, Displayers, Trådlöst, Headset, Startklockor och diverse tillbehör
- Sport Support Scandinavia -
<https://www.sports.se/produkter/microgate/>
MICROGATE Timing
Klockor, Startgrindar, Fotoceller, Displayers, Trådlöst, Headset, Startklockor och diverse tillbehör
- Dala Storbild - <https://dalastorbild.nu/>
FLEXLED Leddisplays
EMIT Startklockor



**TACK FÖR ATT NI
ÄGNAT ER TID ÅT
OSS !**



**TIME IS
RUNNING
OUT**