SWISS TIMING Service catalogue
FIS Nordic Combined World Cup 2023/2024

1. Equipment

Scoring System Ski Jumping

- UPS backed up[1] computer network (main and backup network)
- 5 judging terminals
- Speed measurement (main and backup speed measurement)
- FIS certified video distance measurement
- 3 phases start time control system with time display and lights (red, yellow, green) at the start gate, in the Jury room and at the coaches platform
- Trainer scoreboard (BIB number, speed, distance, points)
- 7 wind measuring devices for Normal and Large Hill events. With analysing software for the Jury, display at coaches stand and possible TV insert
- Evaluation system with 1 laser printer for all lists required by FIS in English (printer located in the judges tower)
- Pan, tilde, zoom camera including video replay system to observe starting gate
- Additional display at the starting gate to indicate current gate and change of gate
- Real time interfaces to the video distance measuring system, in run speed measurement, judges scores, wind speed measurement[2], start time control system, media information system (MIS), and TV graphics
- Real time interface to live results of the FIS homepage (XML interface)
- Interface for PDF and XML result upload to FIS homepage
- Data feed to the local scoreboard if technical requirements are communicated to SWISS TIMING 2 months prior to the event

Timing System Cross Country

- 3 start time displays
- Timing equipment for 2 intermediate times, start control and finish line
  Following features are available for each intermediate timing point
    - transponder-based timing system
    - transmission electronics unit
- up to 3 additional intermediate points may required for several races
- 70 pairs of active transponders for men and 40 pairs for women
- Double photo cell and two independently and parallel working timing units for the finish time record
- 1 HD Video replay system for the start/finish
- 2 photo finish camera (resolution: 1/1000 sec)
- Online interface to the data distributor
- Video surveillance system with 2 video streams
    - 1x HD video stream of the finish line for monitoring
    - 1x HD video stream of the host broadcaster signal (leading camera)

Data Service Cross Country

- Data distributor
  Online interfaces to timing system, scoreboard, TV graphics system and Media information system
- Real time interface to live results of the FIS homepage (XML interface)
- Results PC with laser printer to produce all lists required by the FIS (in English)
- Scoreboard control PC
    - displays the result of an athlete including current ranking and time behind the leading athlete
    - Start list and total results lists

[1] Backup Power allows to finish the current athlete and to shut down computers to avoid permanent damage of computers.
[2] Due to certain weather conditions the anemometer might freeze. In this case gathering correct wind data is obstructed.

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HD TV Graphics System

For the production of online TV graphics for the world feed in English

- Start lists, intermediate and final results
- Sidebar
- Information of the current jumper
- FIS World Cup ranking, special results (i.e. different scoring)
- Intermediate times, time behind and rankings at intermediate timing points
- Other languages upon request
- Track profiles (if FIS provides necessary data files)
- GPS graphics if additionally requested by FIS or Host Broadcaster

Media Information System (MIS) with 12 MIS terminals

Following information is displayed:

- General competition information (delays, rescheduling, cancellations)
- Start lists, intermediate results, final results, distances, points, score, speed
- World Cup Standing, Biographies and historical data of current season
- Intermediate times, time behind and standing at the intermediate timing points

Locations Ski Jumping:

- 1 MIS terminal Competition Management / Jury
- 1 MIS terminal for the announcer
- 1 MIS terminal at coaches platform
- 2 MIS terminals at OB van
- 1 MIS Exit gate FIS
- 1 MIS terminal for commentators

Locations Cross Country:

- 1 MIS terminal Competition Management
- 1 MIS terminal for the announcer
- 1 MIS terminal at OB van
- 2 MIS terminals for commentators

All MIS terminals are assigned only to above locations. Please contact us if you wish to use them at different locations.

"To beat" Laser line

For the projection of reference mark line on the hill

- Live updated individual to beat line (green color)
- May be impacted in case of precipitation (snow, rain, fog) or direct sunlight
- The parallel use of virtual to beat line for TV insert is recommended in order to ensure top-level TV production quality

2. Staff

- Up to 9 sports experts for Nordic Combined World Cup

3. Obligations of the organizer

The organizers shall provide the following:

Board, Lodging, Transport, Accreditation, Equipment Loading

The accommodation of the FIS service team has to be arranged in the same hotel as the FIS Jury / Competition Management. Accommodation in a different hotel has to be confirmed by SWISS TIMING.

- Accommodation (single rooms, international standard) with full board for all staff members up to 3 nights before 1st training until one night after event. If required, meals have to be provided at the venue

- Accommodation for a separate pre installation team (4 persons), if the FIS Calendar schedule requires this (SWISS TIMING will inform the Organizers on time)
- On site shuttle service for all staff members on request
- 4 parking permits close to SWISS TIMING working space in the timing room jumping hill / timing room Cross Country stadium
- **Full Access** accreditation for all SWISS TIMING team members
- The OC is responsible for unloading and loading the equipment before and after the event if delivery is made by a forwarding agent. Details will be sent in good time. If you have any questions, please contact David.Krebs@swisstiming.com and Srdja.Boskovic@swisstiming.com.

Volunteers

6 volunteers are required for transport purposes, setup and dismantling. Date and time of their availability will be submitted by SWISS TIMING prior to the event. If not informed differently the following things need to be considered regarding this.

- Support by 6 volunteers for 2 hours on the first installation day (the day before the first training) and the dismantling day (about 1 hour after the last competitor)
- Important Information! Needed lifting and transportation gear has to be provided. Dismantling will be done after Ski Jumping even if the Cross Country race takes place at the same time!
- 4 volunteers to support for transponder distribution and return

Additional working hours incurred and any further delays resulting from this, which result from the non-provision of the requested volunteers, will be charged to the OC.

Skidoos

- Daily provision of a Ski Doo with suitable trailer (including driver or permission to drive) for the setup of the intermediate timing points on setup days and competitions days
- The Skidoo needs to be available at least 3 hours prior to the event start
- Permission to access the course on competition days in coordination with the FIS

Internet connection

The FIS World Cup organizer shall provide a separate and wired DSL connection (or LAN) in the judges' tower and data centre Cross Country. The internet needs to be available from the arrival day on.

In addition to that, an internet connection (DSL or LAN) has to be available on the working table at the location of the team captain's meeting in order to be able to email start lists.

- The following ports must be unblocked at the provided internet connection before arriving of the Team:
  - 1650-1653 livewc.fisski.com / live.fisski.com for live upload to FIS SJ → INBOUND and OUTBOUND
  - 1643 live upload to FIS NC SJ → INBOUND and OUTBOUND
  - 1753 live upload to FIS NC CC → INBOUND and OUTBOUND
  - UPD 500 (IKE) Connection VPN → INBOUND and OUTBOUND
  - UDP 4500 (IPSEC) VPN encryption → INBOUND and OUTBOUND
  - 3306 db.fisski.com connection to FIS Database → INBOUND and OUTBOUND
  - 11195 connection for MIS → INBOUND and OUTBOUND
  - 80 http / MIS → INBOUND and OUTBOUND
  - 443 https → INBOUND and OUTBOUND
  - 587 secured Mail → OUTBOUND
  - 143 secured Mail → INBOUND

- UDP 1139 VPN → INBOUND and OUTBOUND

Do not provide IP range of 10.1.0.0 to 10.1.31.255 for internet connection

Radio Frequencies

The FIS World Cup organizer shall provide exclusive radio frequencies for the duration of the world cup event.

- For the competition week: valid permission for the use of wireless frequencies for on-site transmission -> tuning range (833 MHz - 928 MHz); requested frequency (874.0000, 879.0000); bandwidth (1 MHz); output power ERP (0.5W); antenna (2dBi); antenna over ground (2m); reason: collecting real time wind data; connection: ground - ground; number of devices: 10; Manufacturer: ANSolution ANY900 STIN
- For the competition week: valid permission for the use of radio frequencies: 160,090 MHz; 160,110 MHz; 160,130 MHz
- Following frequencies are used to do the transponder timing. The LOC needs to take care of an interference free use of these frequencies:

  Activator Loop

  125kHz, Bandwidth: 15KHz, Power 100 mW

  Sensor Transponder

  European band: 863-870 MHz, preferred: 863,75MHz; 864,25 MHz; 864,75 MHz; 865,25 MHz; 865,75 MHz; 866,25 MHz; 866,75 MHz; 867,25 MHz;

  US band: 902 -928 MHz, preferred: 905,00MHz; 905,5 MHz; 906,0 MHz; 906,5MHz; 907,0 MHz; 907,5 MHz; 908,0 MHz; 908,5 MHz;

  - All frequencies used with a required gap of 500kHz !!!
  - Bandwidth: 250kHz, Power 20 mW

Technical Requirements

We advise the organizer to provide the required installations in conformity with international working safety standards. This includes access paths by stairs, climbing ropes, mountings, removable poles and safe access to video distance installations.

The local organizer shall be responsible for the provision of the following:

Container

- Office or double office container in the TV compound, max. distance to the OB Van 20m, information about container size will be send prior event
- Heated/air-conditioned and even with ground
- Minimum Dimensions Graphics Only: Length x Width x Height - 6m x 2.4m x 2.5m
- Minimum Dimensions Graphics and Data: Length x Width x Height - 6m x 4.8m x 2.5m
- Main power supply (3x 220V, 16 A, separately fused); official technical power which is used by TV
- 6 meters of table working space and a minimum of 5 chairs

Location of the team captains meeting

- Working space of 2x1m including table and chair as well as power supply and internet

Judges Tower

- Power supply (220V, 16 A, separately fused) in Jury room
- Heated room for PC and laser printer with a working space of about 4 x1 m including power supply (220V, 16 A, separately fused)

- DSL or LAN (cable) connection
- International telephone line including telephone

Jumping Hill

- Installation of mounting fixtures for the speed measurement
- Installation of 7 removable poles (diameter 4 - 5cm) for the wind measurement according to the FIS rules; height similar to the athletes' flight trajectory (see appendix)
- Power supply is mandatory at each wind measurement position (110 to 230V, 10A, separately fused) in order to ensure proper working of the wind measurement
- Installation of mounting fixtures for the start time control at the start, close to the lowest Start gates, according to FIS regulations, including power supply (220V, 16A)
- Provision of camera towers for the video distance measurement that need to comply with the industrial safety regulations including power supply (220V, 16A)
- Take off - Power supply (220V, 10A) for the trainer scoreboard at the take off
- Exit Gate Area - Power supply (220V, 16 A, separately fused) at the exit gate area
- Coaches Stand - Power supply (220V, 16 A, separately fused) at the coaches stand
- Start location - Power supply (220V, 16 A, separately fused) at the starting gate location

Timing Centre Cross Country

- Main power supply (220V, 16 A, separately fused)
- Heated room (at least 10 x 3 m or standard Euro 6.05m x 2.43m x 2.59m) with three desks each of 6 x 1 m in order to place the timing equipment. Facility needs to have view to the finish
- Provision of 3x2 wire twisted pair unshielded/shielded cable or ordinary telephone cable connection to all intermediate timing points outside the stadium. The line needs to be operational upon arrival of the SWISS TIMING service team / alternative a 2 wire fiber connection for singe ST use is useable (SM or MM)
- Power supply (220V, 16 A, separately fused) at the Cross Country starting area
- OC should provide 1 SIM card for each timing point for the backup connection between timing point and timing room
  Data transmission from pre-timing to the Timing room will be realized with LTE Cellphone network. Following service needs to be activated local mobile data SIM cards with gprs data transfer enabled (around 30Mbit/s Data transfer).
  This solution is working under GPRS (General Packet Radio Service) the total amount of data wouldn't exceed 300MB.

Equipment storage room max distance 20m to timing centre

- Power supply (220 V, 16 A, separately fused)
- Heated room (at least 6.055m x 2.435m x 2.591m container)
- Close to the timing centre

Miscellaneous Requirements

- A cable tray at the exit gate area at the point where athletes cross the gate
- The organizer is responsible for the print distribution service.
- Provision of commentator cabins with power supply (220 V, 16 A)
- The organizer shall ensure that no cables such as high voltage current lines, power supply lines, telephone lines, TV cables, motors of rail-mounted cameras and transformers for TV lights, etc. are laid out or installed out within 7 meters of the finish line and other timing points
- The finish line must not be made of metal or contain metal parts
- No TV antennas within 7m of the data centre and the finish line
- If the event is run in the evening, the finish line needs to be lighted appropriately (at least 1000 Lux)
- No loudspeakers should be placed up around 30m of the timing centre

- Barrier or protection fence for timing equipment at the finish line/area; no finish area entrance at the finish line
- For events the timing equipment has to be shipped by airfreight, provision of 2 chain saws
- Power supply (220V, 16 A, separately fused) at the Cross Country starting area
- Provision of hourly updated weather data (air temperature, snow temperature, air humidity, wind speed and direction) at competition days from 1 hour before the event start until the end of last competition

4. Host broadcaster requirements

The local organizer is requested to inform the Host broadcaster about:

- SWISS TIMING graphics working place is located in the graphics container close to the OB van (Ski Jumping) and in the timing room at the finish line or close to OB van (Cross Country)
- Main power supply for the SWISS TIMING graphics (220V, 16 A, separately fused); same power circuit as the OB van
- Provision of a synchronization between OB van and TV graphics
- Provision of 10 HD video connections between OB Van and graphics location
- Provision of a broadcast feed and the necessary camera pictures to the graphics location
- Installation of an Intercom connection between OB van and the graphics operator in the graphics location
- Undelayed HD SDI program (BNC) shall be available in the Cross Country timing room and Ski Jumping timing room for recording and reviewing purposes of the FIS

Following services must be provided by Host broadcaster for the virtual to beat line if ordered:

- Installation of a data cable (XLR or CAT5) from the virtual camera to the SWISS TIMING graphics location
- The distance from camera to OB van must not exceed 1000 meters
- “XLR / CAT5” is a shielded twisted pair copper cable with a female XLR connector on the camera side and a male connector on SWISS TIMING side
- If distances longer than 1000 meters, a single mode fibre optic cable is to provide
- Fibre optics is a single mode 9µ fibre optics cable pair (SC connector) on both ends
- The Host broadcaster is responsible for the provision of a broadcast camera

Please forward the detailed lens specification

- SWISS TIMING will provide the modified tripod head (Vinten Vector 700)
- Power grounding at rail cams to avoid problems as we had during the last seasons

5. Optional SWISS TIMING Services

for overseas and non-EU areas please order 2 months or earlier prior competition due to additional custom papers and extended equipment delivery time

Media Information System (MIS)

- Additional MIS terminals are available
- Additional MIS terminals need to be ordered

- If more than 10 MIS terminals are ordered, an additional SWISS TIMING technician is necessary
- **Price:** upon request

World Wide (Internet) Media Information System (wwMIS)

- Additional SWISS TIMING wwMIS logins are available
- Additional wwMIS logins need to be ordered in writing 2 weeks prior to the event
- **Price:** upon request

Virtual to beat line

- To ensure high-quality international TV signals, FIS strongly recommends the use of the virtual to beat line. This service is provided by SWISS TIMING and should be ordered and paid by the Host Broadcaster
- **Price:** upon request

Speed measurement

- Transponder based Speed measurement points for Cross Country part need to be ordered in writing 1 month prior to the event
- If more than 2 speed measurement points are ordered, an additional SWISS TIMING technician is necessary.
- **Price:** upon request

Additional TV graphics feeds

- Additional graphics systems need to be ordered in writing 2 month prior to the event, an additional SWISS TIMING technician is necessary.
- **Price:** upon request

Online Graphics for video wall

- Additional graphics feed for a video wall is available
- Additional graphics feed needs to be ordered in writing 2 month prior to the event
- An additional SWISS TIMING technician is necessary
- A volunteer (good computer knowledge and stress-resilient) or an additional SWISS TIMING technician is necessary
- **Price:** upon request

GNSS Positioning Service

- Provision of a GNSS based positioning tracking service need to be ordered in writing 1 month prior to the event. An additional SWISS TIMING technician is necessary.
- **Price:** upon request

Intermediate Points

- Provision of 1-3 additional intermediate points, need to be ordered in writing 1 month prior to the event.
- **Price:** upon request