ONO SOKKI

CF-4700 FFT Comparator

Time Tracking Function

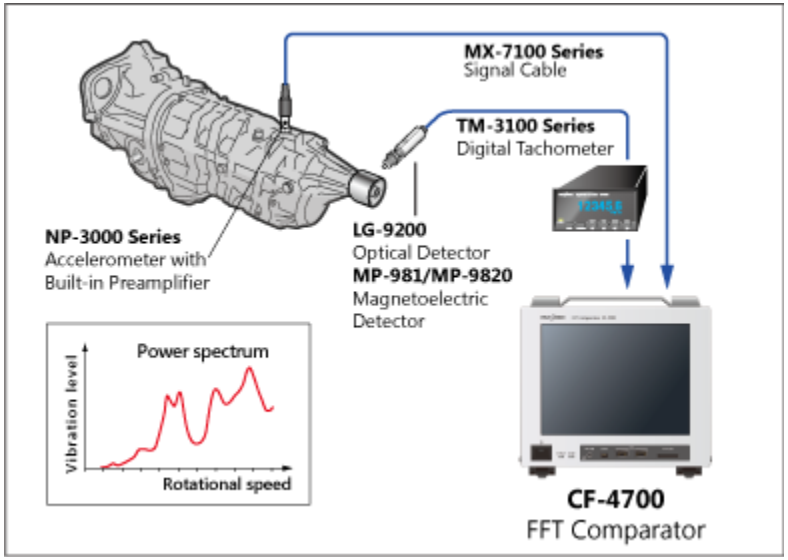
About the time tracking function:

The time tracking function is to measure how the amplitude level changes with the passage of time.

- **[Frequency time tracking]** : How the specific frequency changes with the passage of time
- **[Order time tracking]**: How the specific order changes with the passage of time

If the increasing/decreasing rotation speed is unstable and fluctuates during tracking analysis, there is the opportunity to use the time tracking function instead of the rotation tracking function. In this case, however, the time is displayed on the X-axis. It is also possible to execute the shape comparator function for the time tracking result.

Connection example



The following analysis requires a revolution speed signal (revolution pulse).

- **Order time tracking**
  This function measures how the specific order changes with the passage of time.

- **Constant ratio/ Constant width rotation tracking**
  This function measures how the specific order (specific frequency) changes with the revolution speed.

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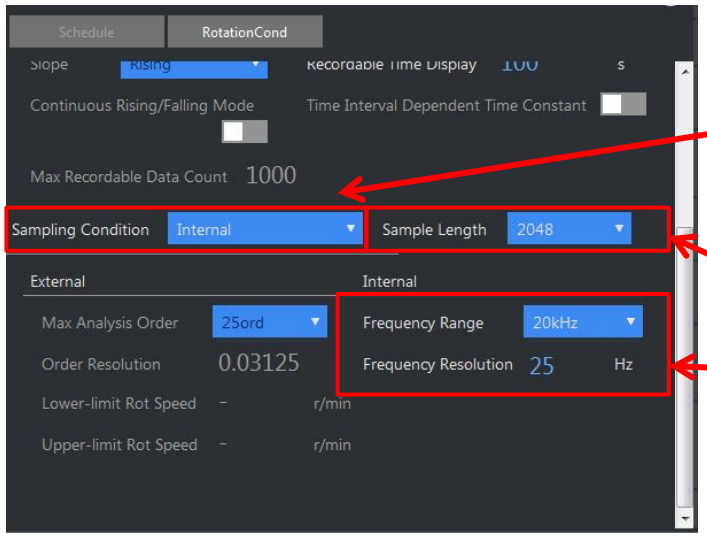
This manual explains how to execute the shape comparator function for the time tracking results.

※The CF-0471 Tracking option is required to perform the tracking analysis.

1. Tracking analysis settings

- Switch [CCLD] ON, if a constant current type sensor is used.
- Set the voltage sensitivity, frequency range and EU value.
- Input the rotation pulse to the EXT SAMP on the rear panel if rotation tracking is performed.
- Set the tracking analysis conditions by pressing the soft-keys in the prescribed order:
  [HOME] → [Measurement] → [Schedule]

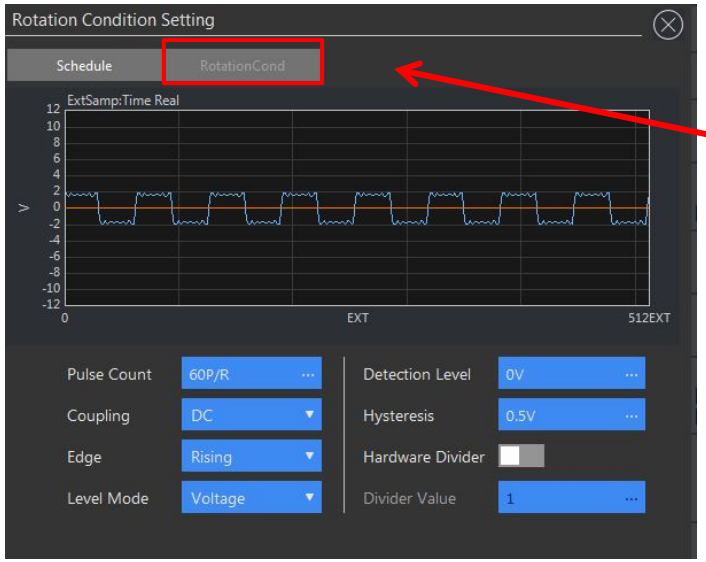
■About the condition setting screen of the tracking measurement



Set the sampling condition to either internal or external. In this manual, internal sampling is selected because a frequency time tracking is performed.

Set the number of sampling points. The frequency resolution and order resolution may be changed.

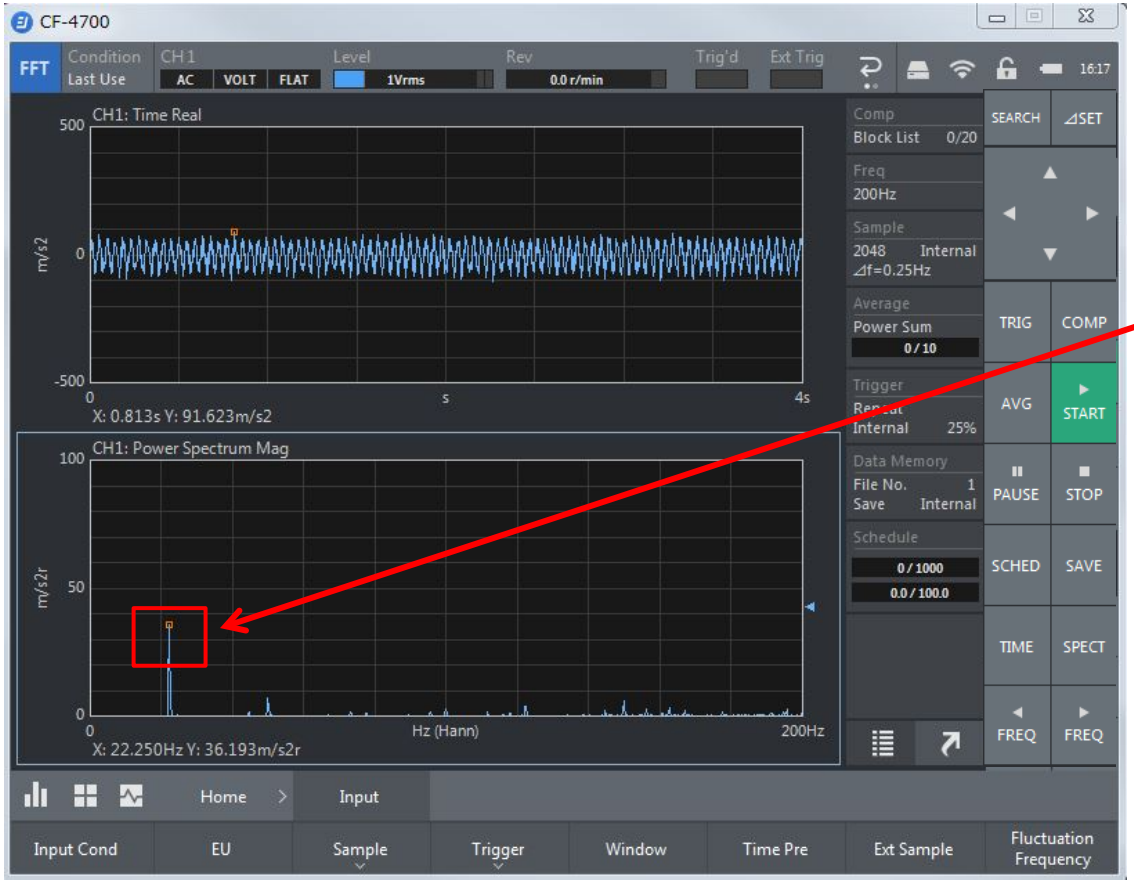
Set the frequency range here. The frequency resolution is displayed below.



If an order time tracking is performed, the rotation pulse can be set in this [Rotation Cond] screen. The number of pulses per revolution (Pulse Count), threshold criteria (detection level), and the coupling can be set.

2. A frequency analysis must be performed before the tracking measurement.

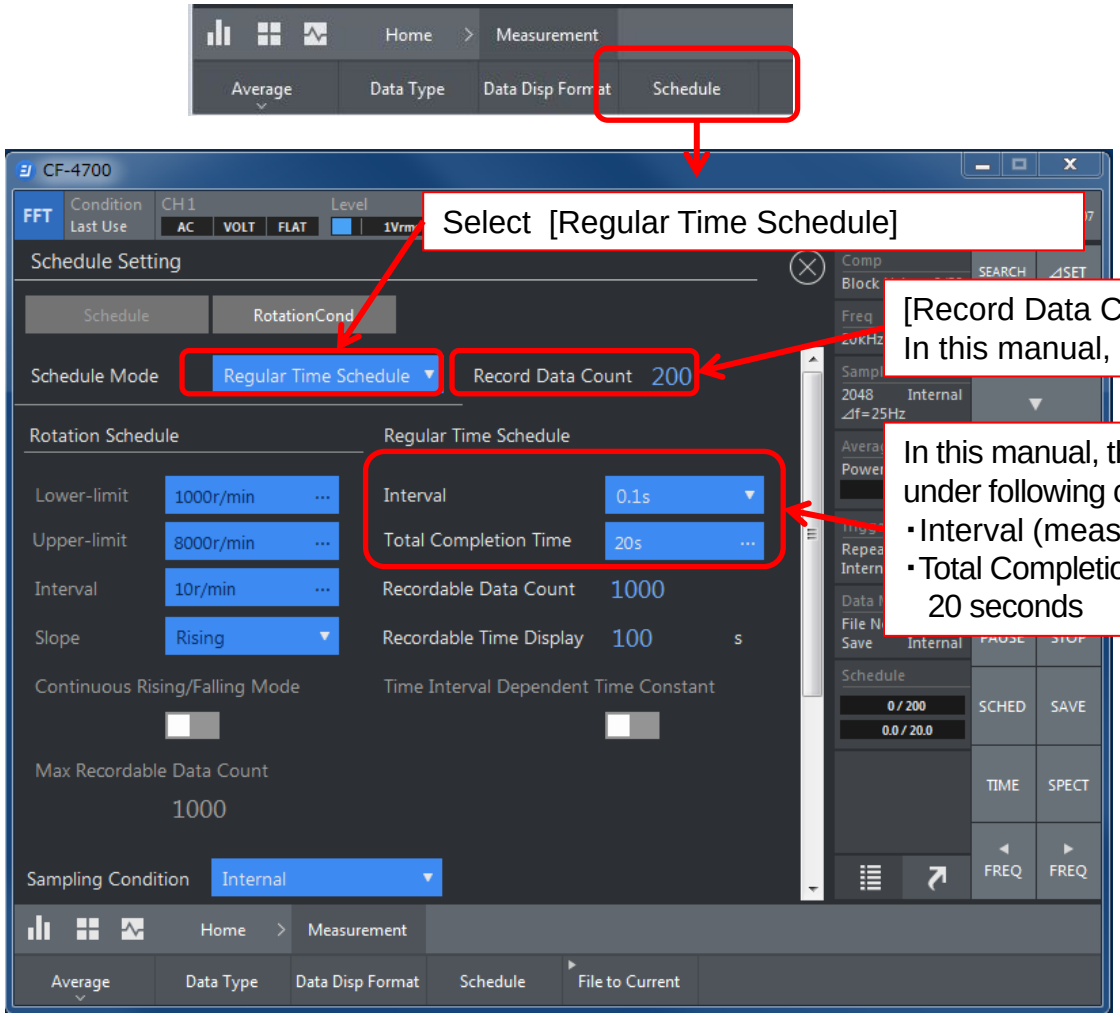
The power spectrum shown below is the vibration example captured from a rotating machine, which generates a peak of the first order at 22.25 Hz.



The amplitude of 22.25 Hz at the search point is the rotation frequency. It does not always exist at 22.25 Hz because of the fluctuation. Be careful on this point when displaying the frequency tracking data.

3. Setting the tracking measurement conditions

This manual explains how to capture the tracking data for 20 seconds at 0.1 second intervals.

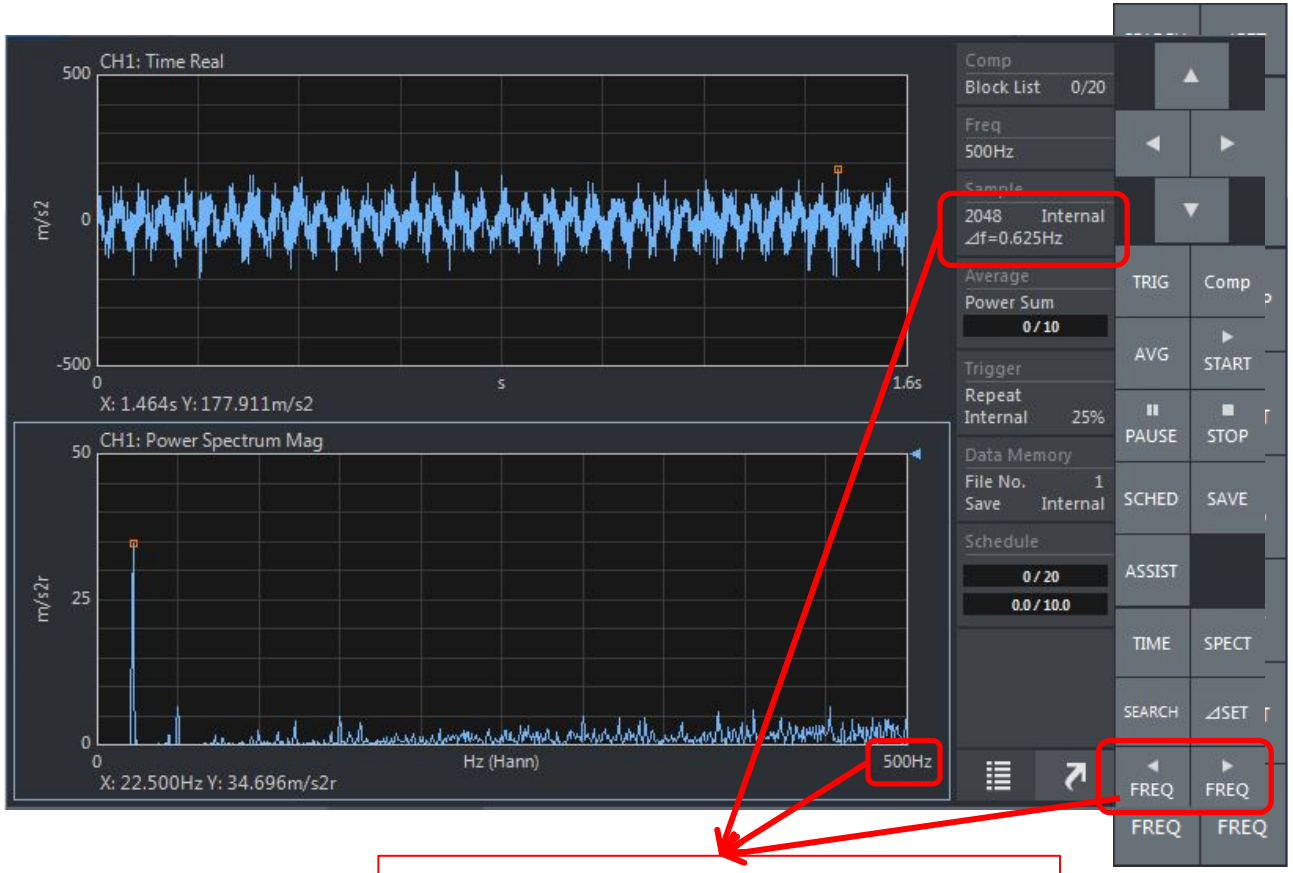


[Record Data Count] is the number of captured data.
In this manual, 200 data will be captured.

In this manual, the measurement is to be performed under following conditions:

- Interval (measurement time interval): 0.1 seconds
- Total Completion Time (Total measurement time): 20 seconds

- Set the frequency range and number of sampling points after confirming of the input signal

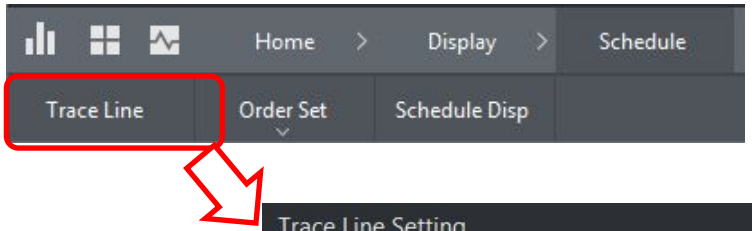


In this manual, the frequency range is set at 500 Hz, and the number of sampling points at 2048.

4. Setting the display of time tracking data

Set the trace line in the following steps. It enables you to set which change of frequency components over time to measure .

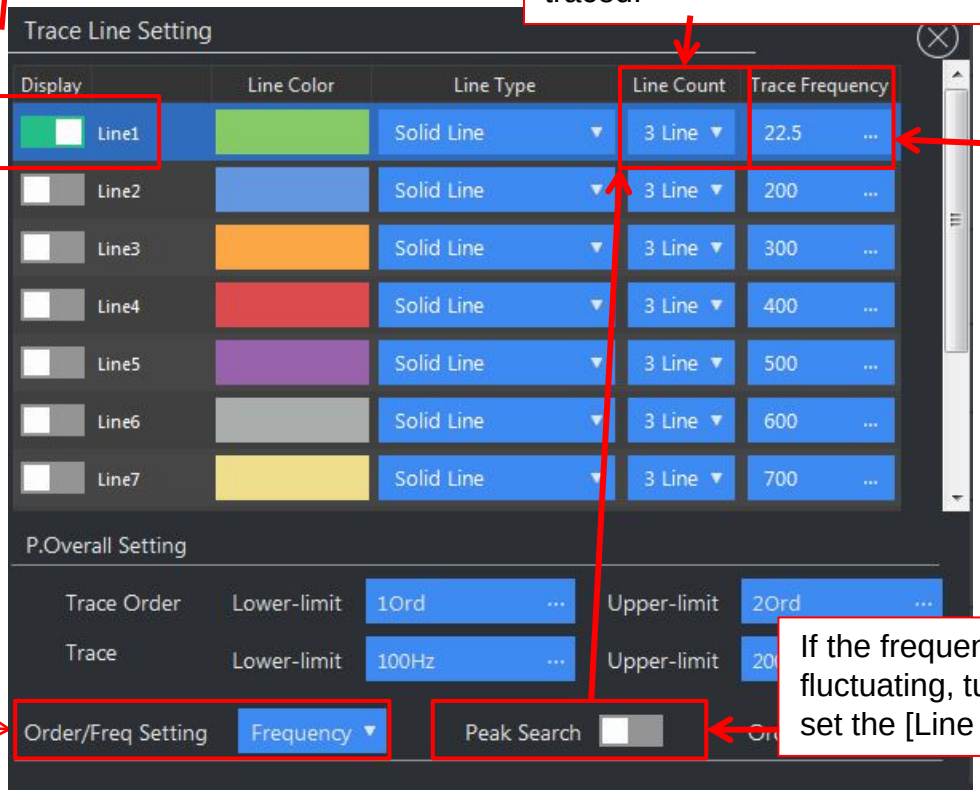
[HOME] → [Display] → [Schedule] → [Trace line]



The maximum value of multiple lines can be traced. In this manual, the trace frequency at 22.5 Hz and 3 line are set. According to the frequency resolution of 0.625 Hz (frequency range: 500 Hz, number of sampling points: 2048) the max. values between 20.625 Hz and 24.375 Hz are traced.

Switch [Display Line 1] ON

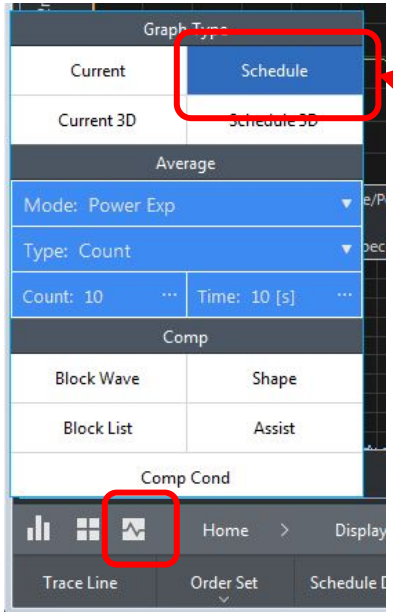
Input the frequency to be displayed



Select either Frequency or Order for the trace value.

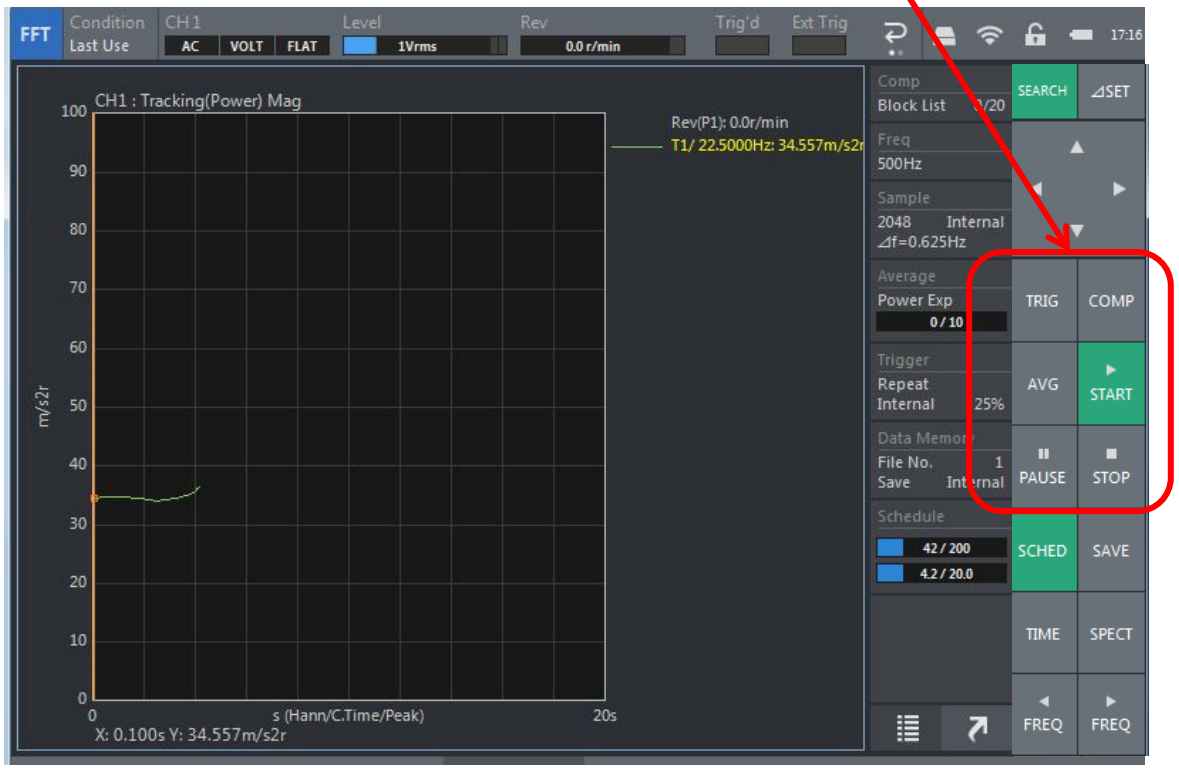
If the frequency to be displayed is fluctuating, turn [Peak Search] ON and set the [Line Count].

5. Start the measurement after switching to the tracking measurement display



Change from [Current] mode to [Schedule] mode.

The measurement starts by pressing [SCHED] and [START]. In this manual, the measurement finishes after 20 seconds.



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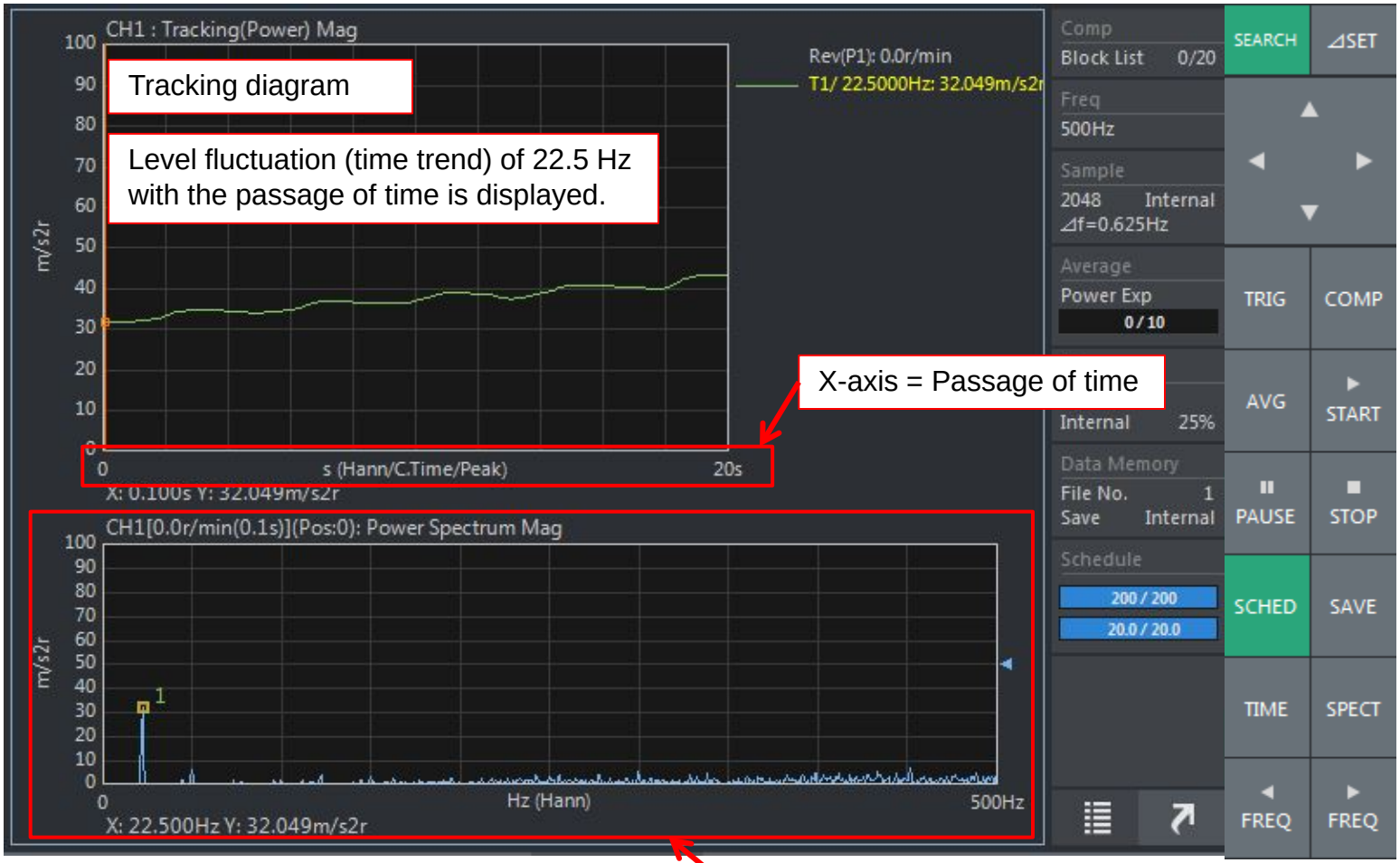
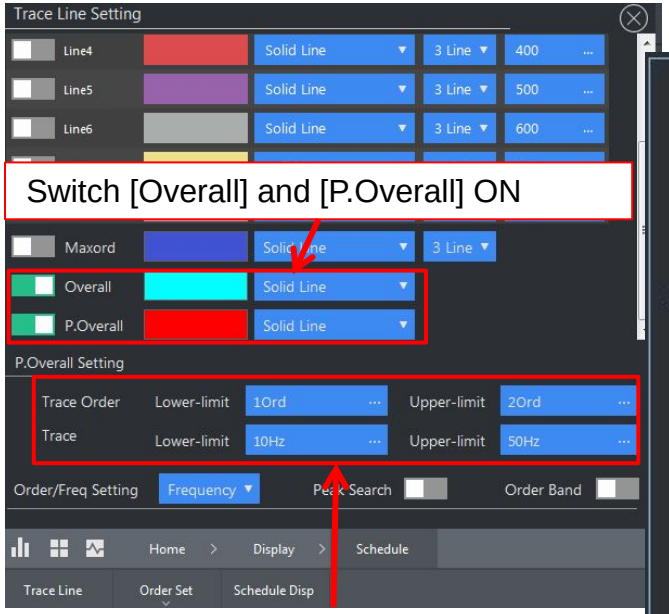
- Displaying the result after the measurement is finished

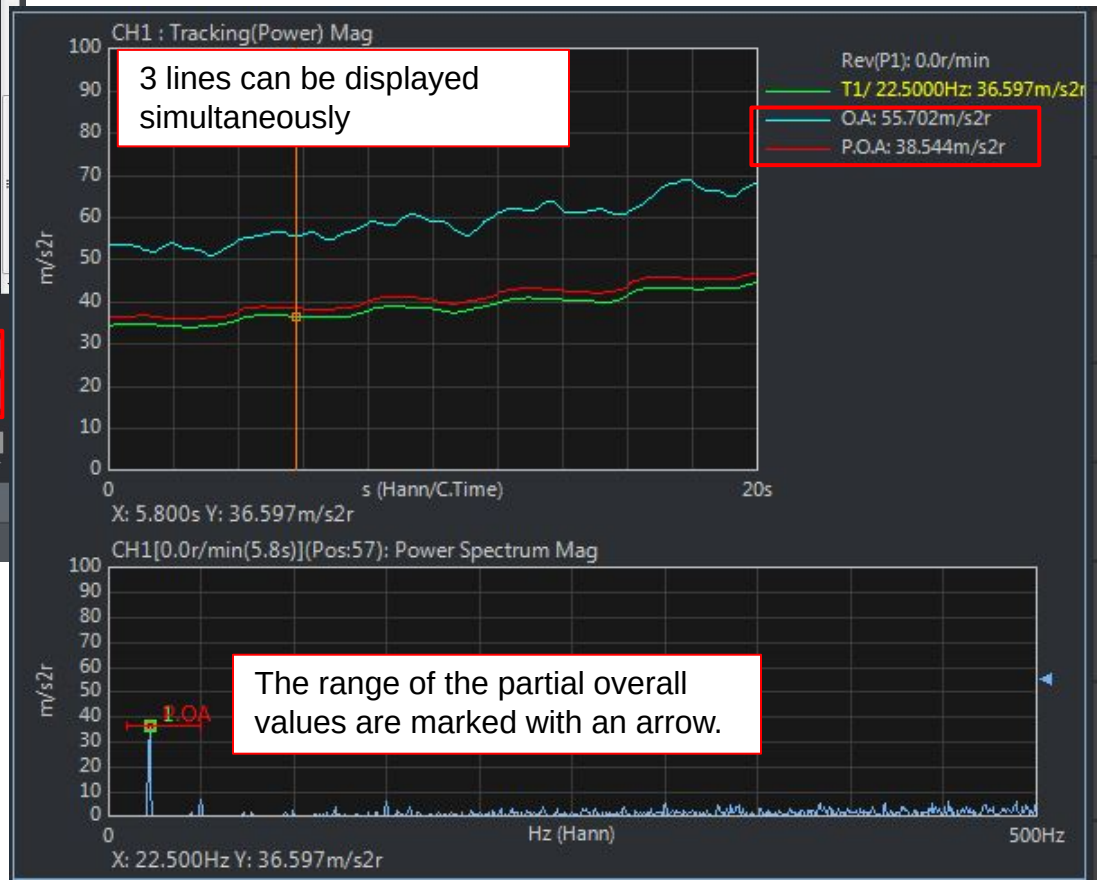


6. Displaying the measurement results (overall and partial overall)

In frequency time tracking mode, the total value of the power spectrum of the entire preset frequency range (overall value), and the total value of the power spectrum of a part of the entire preset frequency range (partial overall) can be displayed.



Set the frequency range of the partial overall value



Supplement: About time tracking and rotation tracking

If a rotation pulse signal is input while measuring, it is possible to switch the display with the rotation speed on the X-axis after time tracking analysis.

（**Procedures**）

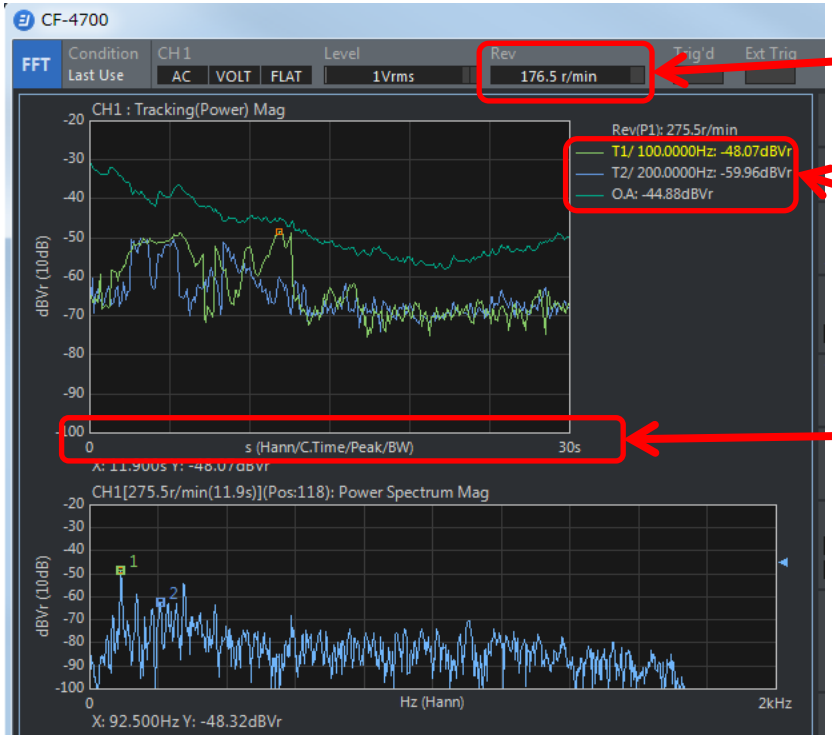
1）Acquire the time tracking data

Input the rotation pulse signal to EXT SAMP IN. The rotation speed (Rev) appears in the upper screen

2）Changing the X-axis (from [time] to [revolution speed])

Change the setting in the display window

① Perform the time tracking measurement while inputting the rotation pulse



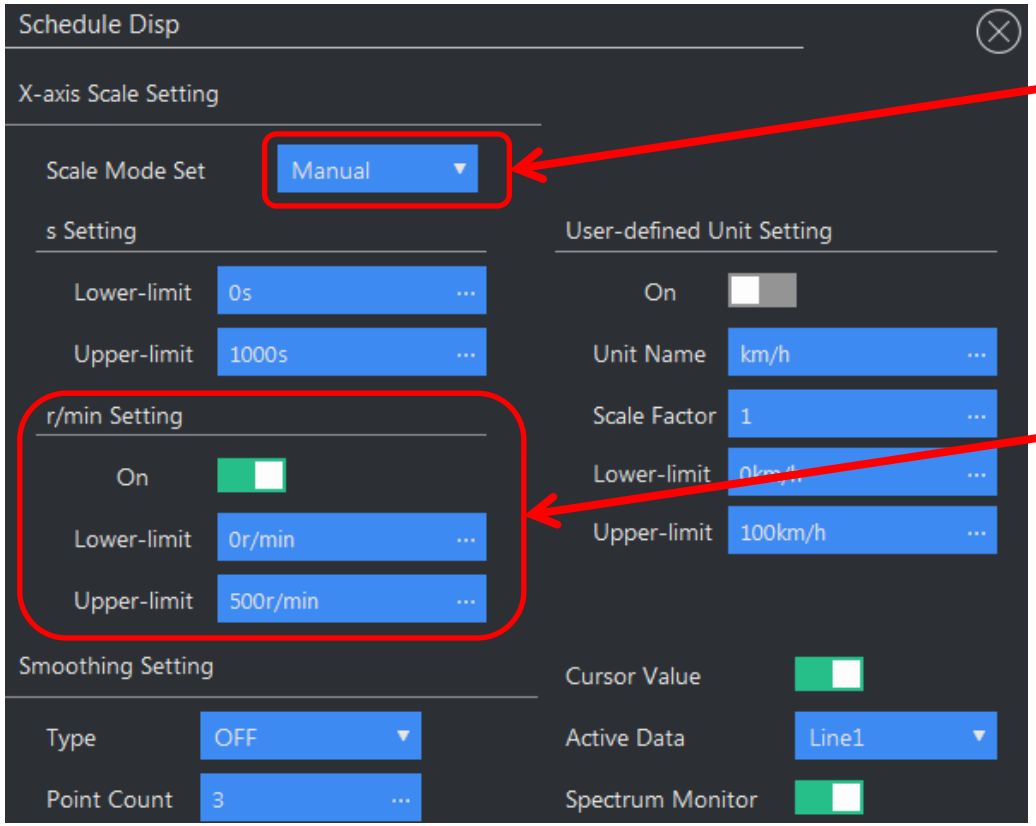
Rotation speed is displayed.

This manual shows the change with the passage of time for 100 Hz, 200 Hz and the overall value.

X-axis = time (0 to 30 seconds)

② Changing the unit of the X-axis of the time tracking result to rotation speed

Open [Schedule Disp] in the following steps:
[HOME] → [Display] → [Schedule] → [Schedule Disp]



Change from [Default] to [Manual]

Set [r/min Setting] ON, then set the upper and lower rotation speed limits.

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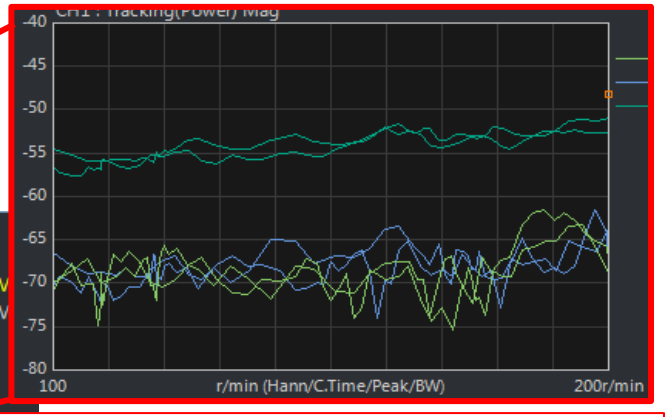
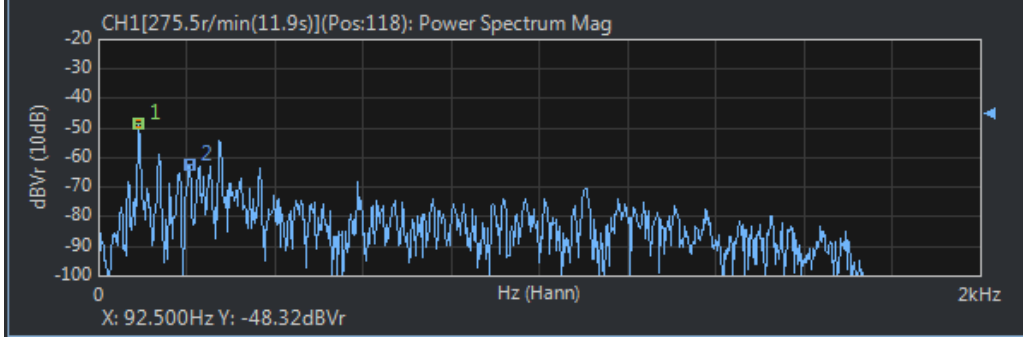
③ Displaying the rotation speed result on the X-axis

Enlarged view





The captured data is displayed as shown above if the data is captured two times with the same rotation speed.

X-axis = Rotation speed (0 to 500 r/min)