

# RH1000 Online Condition Monitoring System



## RH1000 online monitoring station & software MOS3000

### Features:

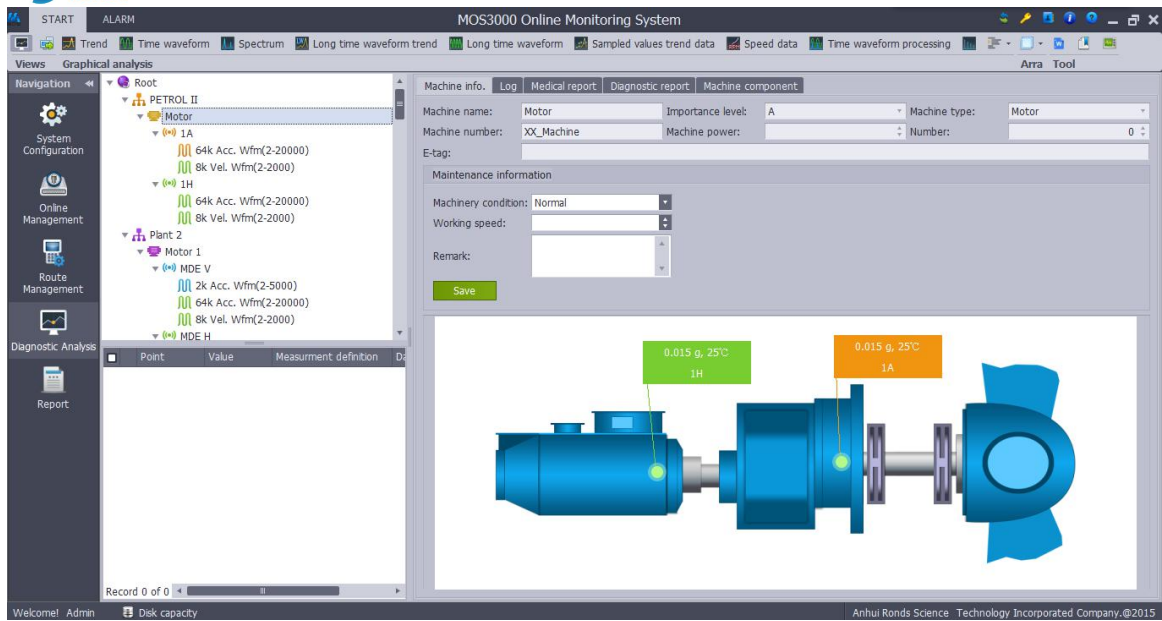
- Maximal 16 channels synchronous data acquisition
- Machine Data Overview
- DAQ Definition Group Management & Characteristic Parameter Group Management
- Configuration Information Tree
- Remote Data Viewing
- Plenty of Data Analysis Tools
- Automatic Calculation of Characteristic Frequency
- Intelligent Alarm Function
- Create report Function

## ※Multi-Channel Measurement

RH1000 online monitoring station consists of 8 or 16 vibration and temperature optional channels, 4 process information channels, and 1 tacho channels. Taking advantage of the patent of RONS, it can realize synchronous data acquisition with all channels.



## ※Machine Data Overview



## ❖Automatic DAQ Measurement

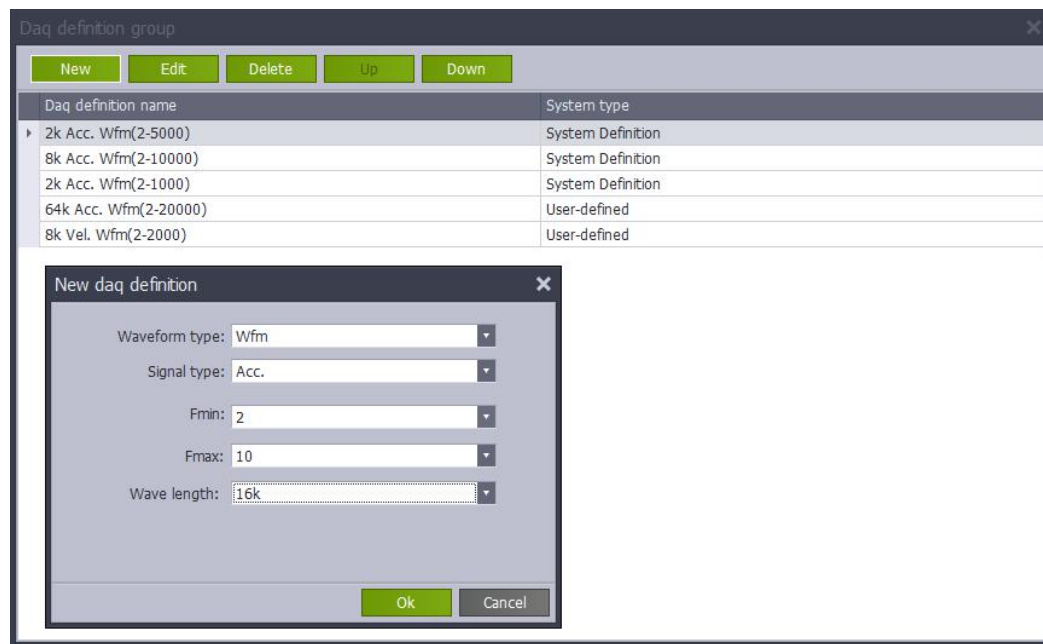
RH1000 can automatically acquire data according to the set parameters and upload the data according to the set time interval.

✓	Daq Time	Value	Instr. SN	Description
✓	2016-09-13 15:20:00	0.015	10764	
✓	2016-09-13 15:15:00	0.003	10764	
✓	2016-09-13 15:10:00	0.003	10764	
✓	2016-09-13 15:05:00	0.003	10764	
✓	2016-09-13 15:00:00	0.004	10764	
✓	2016-09-13 14:55:00	0.006	10764	
✓	2016-09-12 17:00:00	0.003	10764	
✓	2016-09-12 16:55:00	0.003	10764	
✓	2016-09-12 16:50:00	0.012	10764	
✓	2016-09-12 16:45:00	0.003	10764	
✓	2016-09-12 16:40:00	0.004	10764	
✓	2016-09-12 16:35:00	0.004	10764	
✓	2016-09-12 16:30:00	0.004	10764	

## ❖DAQ Definition Group Management

DAQ Definition Group is used to configure the parameters of vibration (Dynamic) data collection, like analysis spectrum, wave length, etc. It has two types: system

default and user-defined.



Alarm threshold values are those indicating certain faults of equipment:

Kurtosis RMS threshold

When RMS value is bigger than  kurtosis alarm(DAQ definition) effects. "0" means this alarm is invalid.

DAQ definition alarm

Type	Working condition	Level 1 alarm	Level 2 alarm	Level 3 alarm	Level 4 alarm
RMS		0.28	4.5	11.2	28

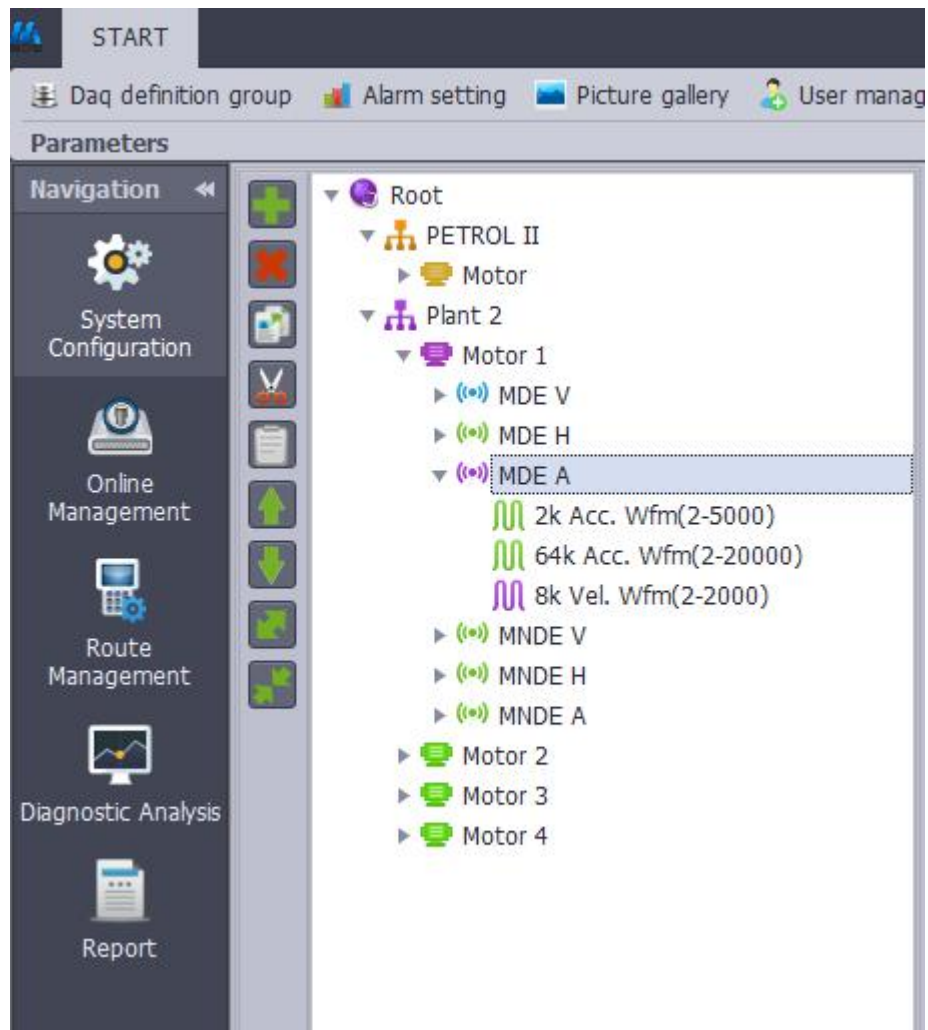
Level one change rate:  Level two change rate:

Index alarm

RMS threshold  Kurtosis threshold

## ✧ Configuration Information Tree

This system provides configuration information tree function, which can save an entire configuration tree. The configuration tree nodes include: organization, equipment, measuring point and measuring definition.



## ✂Machine Overall Condition Display—Web based

Use both B/S structure; users can view machine condition through IE without installing any software.

## Machinery Condition Monitoring Solution

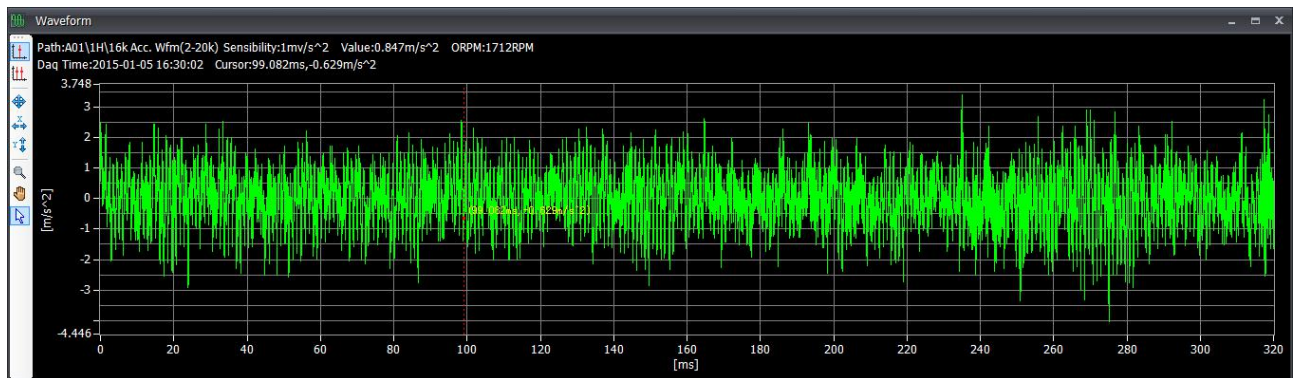


## ✂ Plenty of data Analysis Tools

It has plenty of data analysis function, and the color of background and letter can be user-defined.

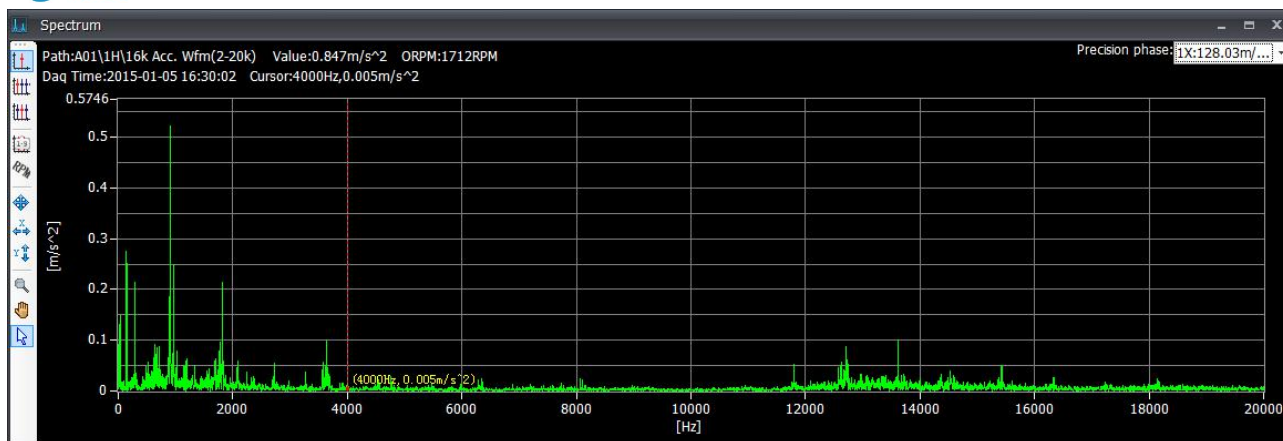
- Trend analysis tools: overall value, temperature, sampling index etc.
- Time waveform, spectrum analysis, envelope demodulation
- Multi time domain, Multi frequency domain
- Waterfall, long time waveform

### 1. Time waveform analysis

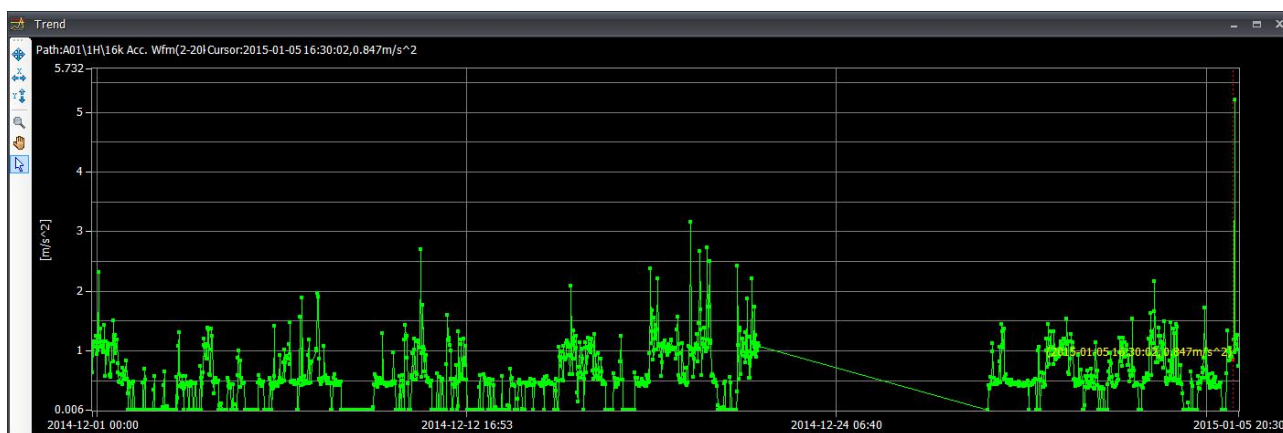


### 2. Spectrum analysis

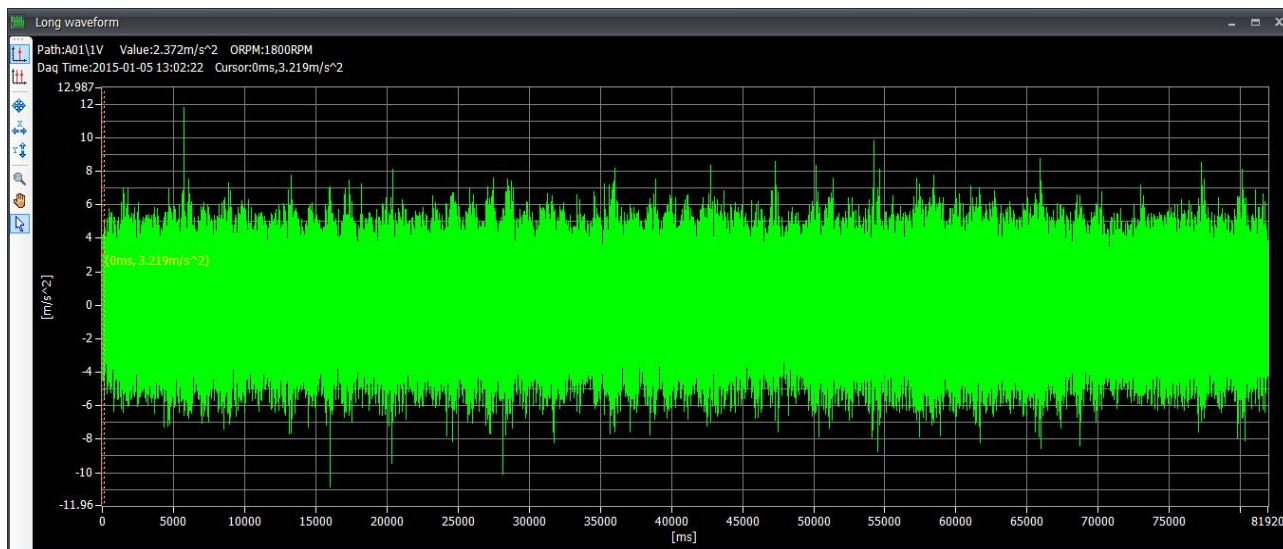




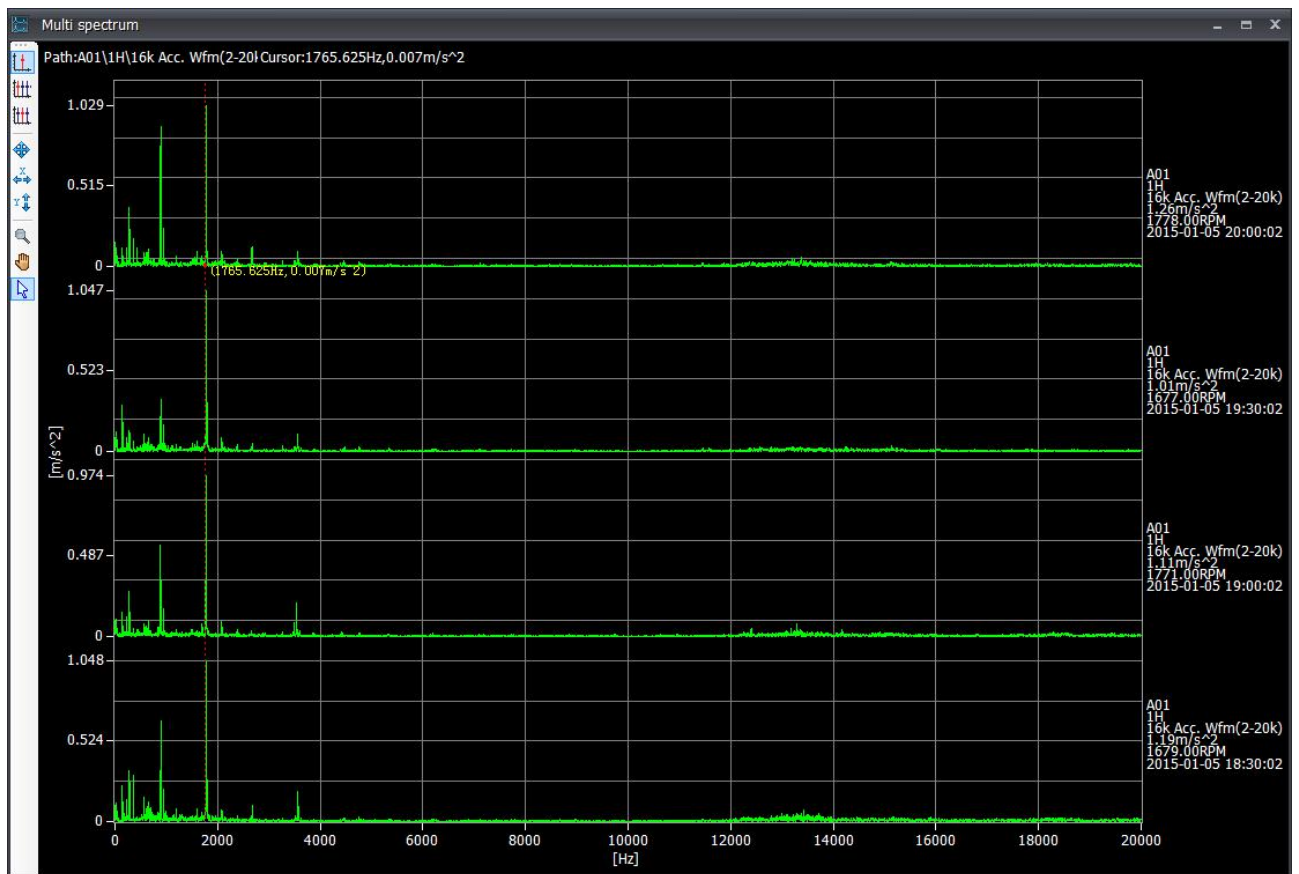
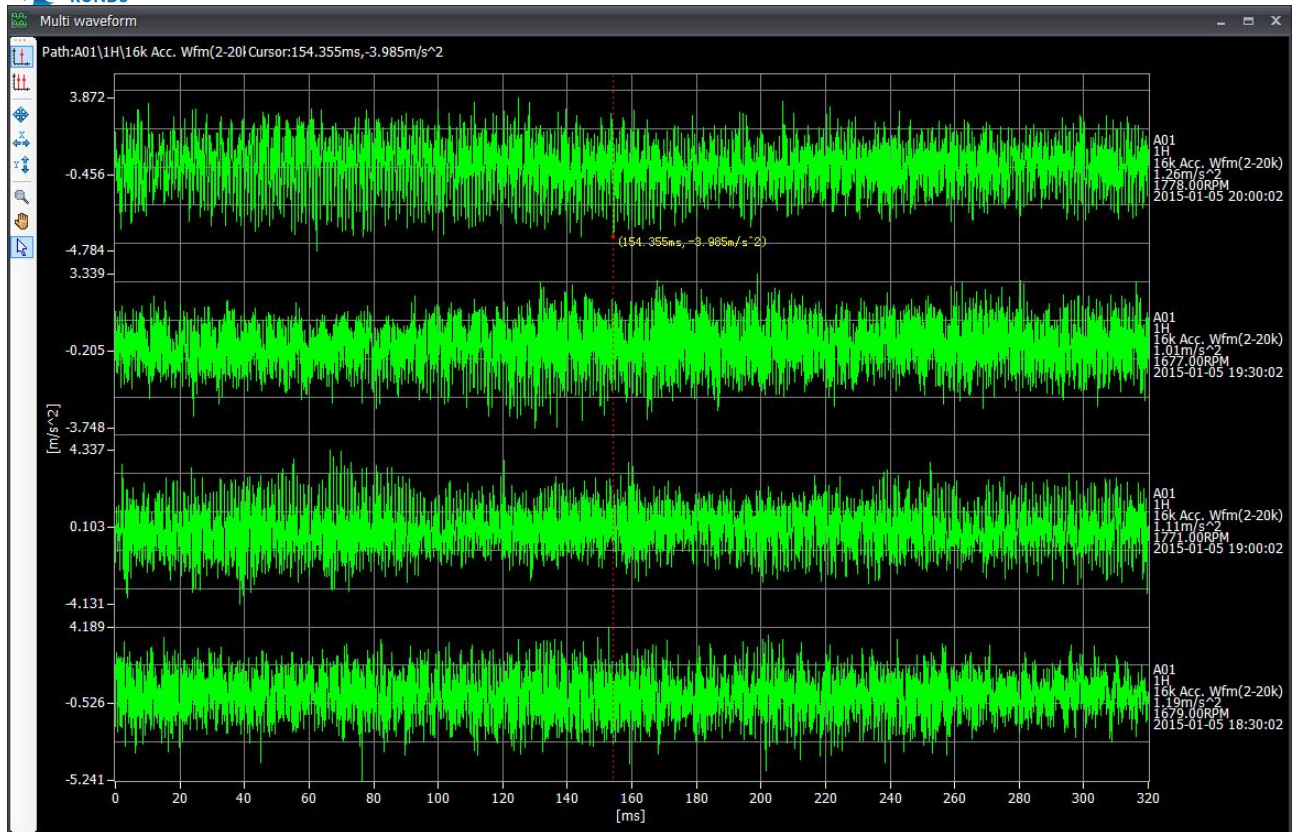
### 3. Trend analysis



### 4. Long time waveform

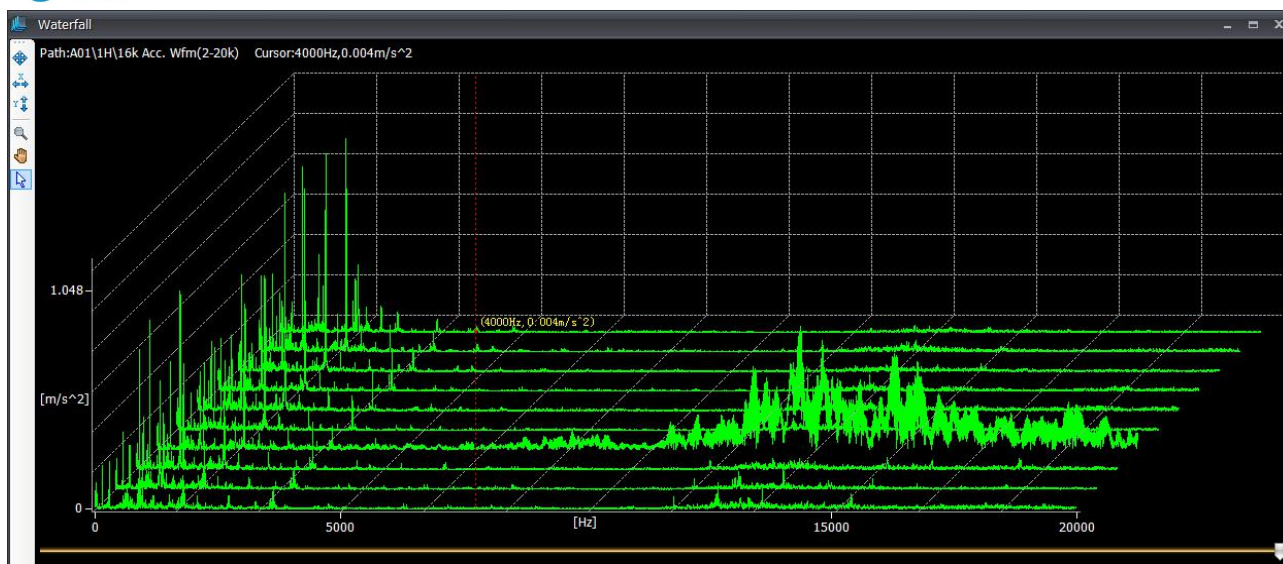


### 5. Multi time waveform, multi spectrum analysis

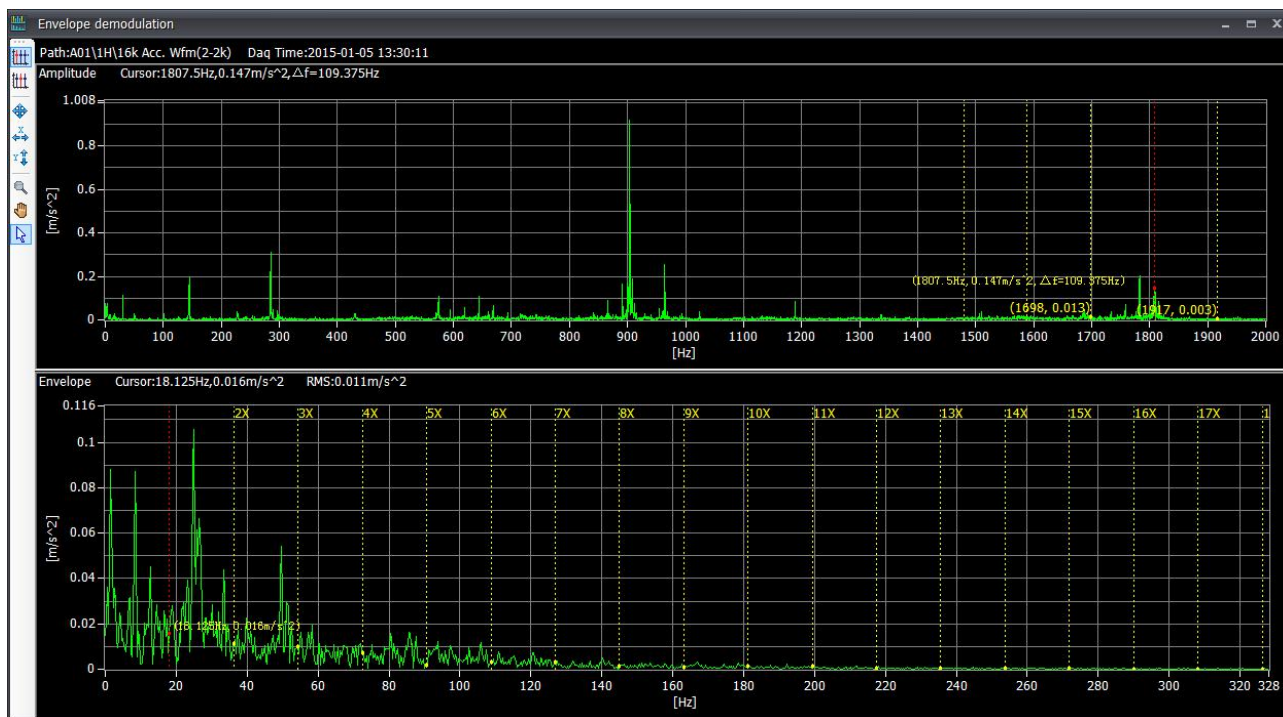


## 6. Waterfall plot

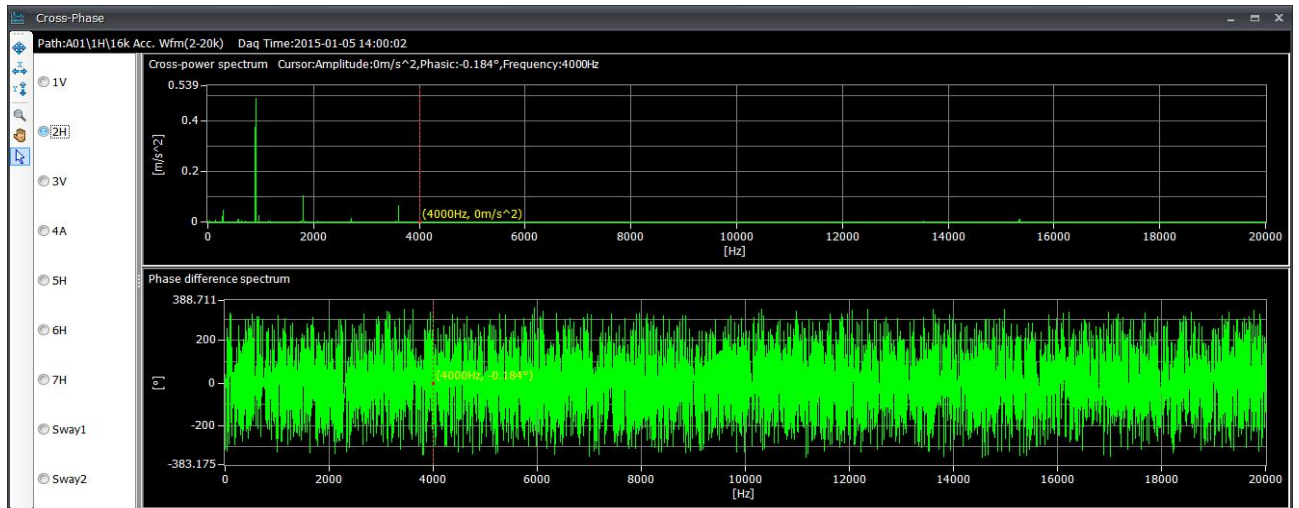




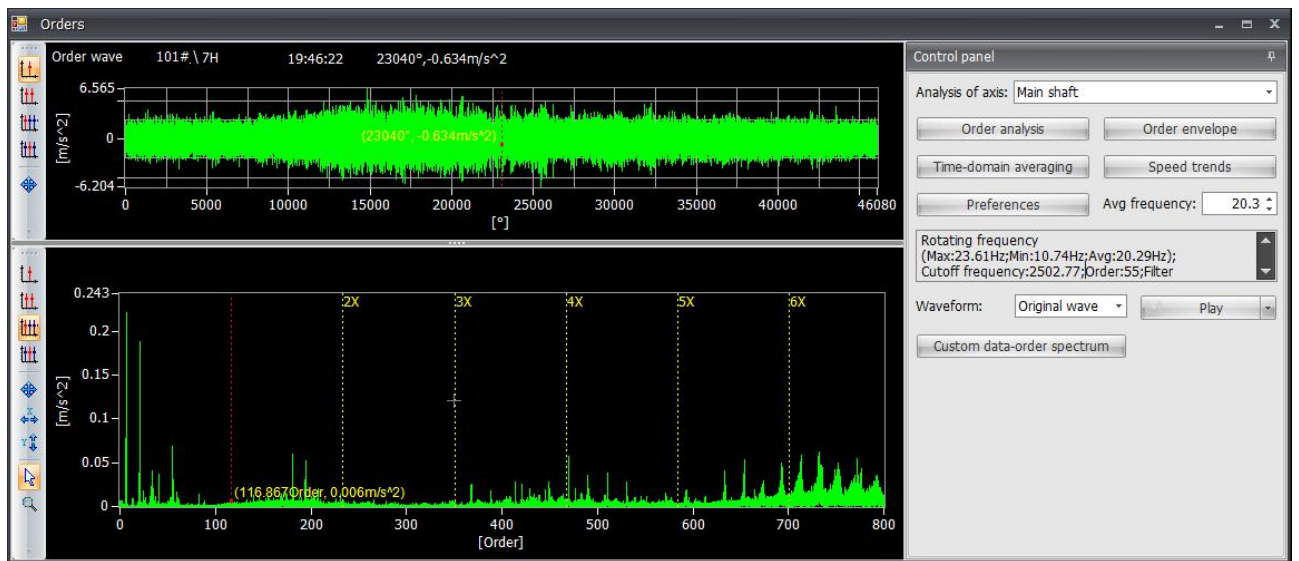
## 7. Envelop demodulation



## 8. Cross phase



## 9. Order track



## ❖ Automatic Calculation of Characteristic Frequency

It can automatically calculate characteristic frequency, and calculate bearing defect frequency base through bearing database;

Frequency		Describe	Model	BPFO	BPFI	FTFO	FTFI	BSF	2*BSF
Main shaft		0.162							
Leaf		0.485							
One-level planet carrier		0.162							
One-level ring gear(95T)(...		0.485							
One-level planetary gear(3...		0.427							
One-level planetary gear(3...		15.359							
One-level planetary gear(3...		0.853							
One-level sun gear(22T)(...		2.094							
Two-level planet carrier		0.860							
Two-level ring gear(101T)...		2.579							
Two-level planetary gear(3...		2.227							
Two-level planetary gear(3...		86.839							
Two-level planetary gear(3...		4.453							
Two-level sun gear(22T)(...		11.842							
L-speed shaft		4.807							
Control panel									
Speed shaft: Generator									
Frequency: 18.266671									
Spectrum cursor search									
Cursor: 4000Hz									
Search									
Cancel									
Bearing display: Frequency									
Feature para									
H-speed shaft									
Accelerate ...		NTN NU2228 (18...	142.480	186.320	7.909	10.357	67.276	134.552	
Accelerate ...		SKF NU2228 (17...	134.625	175.908	7.855	10.412	67.221	134.443	
H-speed shaft		NTN QJ328 (12个)	89.050	130.150	7.416	10.850	40.716	81.433	
H-speed shaft		skf QJ328 (12个)	90.164	129.036	7.508	10.759	40.881	81.762	
H-speed shaft		fag/stamford NU...	141.147	187.653	7.836	10.430	63.276	126.551	
H-speed shaft		fag/stamford NU...	141.147	187.653	7.836	10.430	63.276	126.551	
H-speed shaft		Koyo NU2230R (...	149.056	198.011	7.855	10.412	63.203	126.405	
H-speed shaft		Koyo NU2230 (1...	142.480	186.320	7.855	10.412	67.221	134.443	
Main shaft									
Main bearin...		skf 240/600CA (...	2.060	2.466	0.074	0.088	0.879	1.757	
Main bearin...		NTN 240/600B (...	2.225	2.625	0.074	0.087	0.959	1.918	
Main shaft 2...		skf 240/600CAB ...	2.429	2.906	0.074	0.088	0.881	1.763	
One-level planet carrier									
One-level pl...		SKF NCF29/600V...	2.900	3.405	0.074	0.087	1.001	2.001	
One-level planetary gear(36T)									
One-level pl...		SKF NNF5044DA ...	5.521	6.852	0.192	0.235	1.958	3.916	
Two-level planet carrier									
Two-level pl...		KOY 32972JR (3...	15.648	17.884	0.402	0.458	6.157	12.314	
Two-level pl...		KOY 32972JR (3...	15.648	17.884	0.402	0.458	6.157	12.314	
Two-level planetary gear(39T)									
Two-level pl...		Koyo NJ2324 (13...	11.734	17.212	0.913	1.314	5.656	11.311	
Two-level pl...		Koyo NJ2324 (13...	11.734	17.212	0.913	1.314	5.656	11.311	

## ❖ Intelligent Alarm Function

Overall value alarm, temperature alarm, sampling data alarm trigger and so on:

Alarm	level:	1	2	3	4
Alarm	color:				
Alarm description:		Level one alarm	Level two alarm	Level three alarm	Level four alarm
<div>Ok</div> <div>Cancel</div>					

## ❖ Report Function For Machine

## Machine: Motor 1

Machine number:	1234	Importance level:	A
Machine type:	Motor	Working speed:	
Machine power:		Alarm level:	Level three alarm
Dynamic measure point	Daq Definition		
MDE V	2k Acc.Wfm(2-5000)		
	Sampling time	Value	Alarm level
	2016/9/14 9:10:03	0.01 g	Normal
	2016/9/13 15:55:00	0.023 g	Normal
Dynamic measure point	Daq Definition		
MDE V	64k Acc.Wfm(2-20000)		
	Sampling time	Value	Alarm level
	2016/9/14 9:10:03	0.01 g	Normal
	2016/9/13 15:55:00	0.021 g	Normal
Dynamic measure point	Daq Definition		
MDE V	8k Vel.Wfm(2-2000)		
	Sampling time	Value	Alarm level
	2016/9/14 9:15:00	0.043 mm/s	Normal
	2016/9/13 15:55:00	0.107 mm/s	Normal
Dynamic measure point	Daq Definition		
MDE A	2k Acc.Wfm(2-5000)		
	Sampling time	Value	Alarm level
	2016/9/14 9:15:00	0.003 g	Normal
	2016/9/13 17:00:00	0.005 g	Normal
Dynamic measure point	Daq Definition		
MDE A	64k Acc.Wfm(2-20000)		

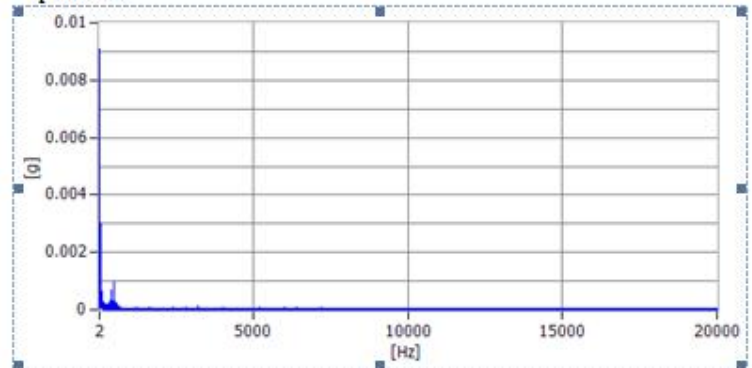
## ❖Report function For Single Data

## Data analysis report.

## Measurement information

Organization: PETROL II.,  
 Machine: Motor.,  
 Point: 1H.,  
 Measure Definition: 64k Acc. Wfm(2-20000).,  
 Daq Time: 2016-09-13 15:20:00.,  
 RMS: 0.015g.,  
 Running speed: 0RPM.,  
 Sampling rate: 51200Hz.,

## Spectrum.



No.	Frequency(Hz)	Amplitude
1.	21.875	0.009
2.	46.094	0.003
3.	25.781	0.003
4.	30.469	0.003
5.	28.125	0.003
6.	37.5	0.002



## Main technical parameters

Vibration input		
Channels	1 to 16 channels optional	Maximal 16-channel synchronous acquisition
Signal acquisition	Acceleration, velocity, displacement, temperature can be acquired synchronously	
Input impedance	220K	
Accelerometer maximal value	80g, 200mm/s, 10mm, 100mV/g sensor	
Sensor drive current	4mA@24V	Constant current supply for IEPE type accelerometer
A/D conversion	24bit delta-sigma ADC	
Frequency range	100Hz – 40kHz	
Dynamic signal range	110dB	
input range	±10V	
Precision	1% ( 0.1dB )	
Frequency response	0.2dB, 10Hz – 5kHz; 0.5dB, 3Hz – 20kHz	
Rotating speed		
Channels	1 speed channel, isolation input	
Compatible type	TTL, Eddy current, Hall	
Triggering level	4V~30Vpp	
Process information		
Channels	4 channels, isolation input	
Signal range	±12V or 4~20mA	
Signal processing		
Window	Hanning, Rectangle window	
Continuous acquisition	4M bytes/CH	
Lines	400, 800, 1600, 3200, 6400, 12800	
Time waveform acquisition	1024, 2048, 4096, 8192, 16384, 32768	
Averaging type	Linearity, peak hold	
Averaging times	1, 2, 4, 8, 16, 32, 64	
Dynamic alarm display	Can set several alarm parameters	
Basic parameters		
Storage	1G Bytes	
Wired Ethernet	TCP/IP, 10/100baseT, Optical (Optional)	
Communication	RS232, RS485, CANbus	
Regular index		
Dimension	300 x 400 x167mm	



Weight	9.8Kg	
IP grade	IP65	
Working temperature	(-40 – 70)°C	
Working humidity	95% RH without condensate	
Storage temperature	(-50 – 85)°C	
Atmospheric pressure	70kPa - 110kPa	
Power supply		
Selectable input voltage	100-240VAC, 50 - 60Hz, <20W	
	24VDC, 1.5A	
Certification		
Certification	GL, CE certification, China General Certification(CGC)	
Immunity to electromagnetic interference		
Electrostatic discharge immunity	En61000-4-2, ±8kV contact, ±15kV air	
Electrical fast transient burst immunity	En61000-4-4, ±4kV	
Surge Protection	EN61000-4-5: ±4kV	
lightning protection	20KA	

### A complete instrument set contains:

1 pc data collector

1 pc Key

4 pcs M8\*25 Screws

5 pcs M8 Nut

9 pcs M8 shim

N pcs M20PG connector

N pcs M20 Waterproof hole plug

1 pc USB disk with MOS3000 software and user manual

N pcs Accelerometers including N pcs magnet base and N pcs M6 screws

N meters sensor cable and armored cable

1 pc Certificate of approval

1 pc Warranty card



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