

# DSP Logger MX300



Vibrations Data Collector

Vibrations Measurements

FFT Analyzer

Machine Balance

Phase Analyzer

Vibration Has Never Been This Affordable

# Hardware

DSP LOGGER MX 300 brings a new level of affordability and easiness to vibration analysis. It is now possible to completely implement a vibration analysis program, on time and on budget!

## Key Features:

- Two channel input
- Route / off route collection with previous spectrum display
- Built-in balancing and phase analysis software
- Advanced bearing analysis with Envelope Spectrum
- Bearing frequency displayed within the analyzer
- Spectrum band alarms
- 16 Mega Bits of memory
- Operating system updates
- Digital Signals Processors (DSP) performing at 48 Mega Hertz
- Frequency range from 0.2 Hertz to 20 Kilo Hertz.
- Multiple inputs such as 4-20 milliamp, 0-10 volt AC-DC and Temperature
- 4,000 Resolution lines FFT
- 16,000 Measurement memory store



## Specifications

### AC Inputs 16 bits

- Two accelerometers (50 100 500mv/g, selected by software)
- Clamp meters (10 100 1000 A, software selected)
- Two displacement (0 10 V or 10 V p-p)
- Auxiliary measure (1 VRMS, AC connection)
- Optical sensor for RPM measures and external trigger.

### DC Inputs 24 bits

- Infrared sensor.
- Passive temperature sensors (pt 100) and active (0-100°C)
- Process signals (4 - 20 mA) units designation, offset control.
- DC Voltage (0 10V) units designation and offset control..
- Displacements (0 10V) units designation and offset control..
- Auxiliary DC Voltage (0-2.5V) units designation, offset control

Output: Stereo earphone 100 mW at 8 Ohms

### Features:

DSP Processor ADSP 2188 , 48 MHz.  
Acceleration, Velocity, clamp meter and auxiliary input spectrums  
Waveform, Overall Acceleration and Velocity: 0-Peak & RMS.  
Overall Displacement Peak to Peak, Envelope Spectrum.

Natural Frequency and Resonance detector.

Phase between two channels without trigger  
One and two plane automatic dynamic balance.

Frequency Response: 0.2Hz 20,000Hz  
Ranges: 25Hz, 100Hz, 200Hz, 500Hz 1,000Hz, 2,000Hz,  
5,000Hz, 10,000Hz, 15,000Hz, 20,000Hz.

Side bands in spectra: Harmonics, zoom in spectra  
Bearing fault frequencies in envelope  
RMS for bands x4 or x10

Windows hanning, flattop and rectangular  
Graphic spectrum: linear and logarithmic

Cursor single, harmonic, harmonic+ single, peak  
Trigger: external, input channel triggering

Sealing IP 65.

USB Port for PC connection

16 Mb of FLASH memory.

320 x 240 monochromatic pixels LCD with LED backlight.  
Suitable to be used with direct solar light

Operating Temperature -10 deg C to + 60 deg C

Housing material : aluminum extrusion

Battery: NiMH 7.2 V, 3,500 mAh rechargeable. Operating time :  
8 hours

Size: 7.6 in x 7.7 in x 2.05 in (193mm\*195mm\*52mm)  
Weight: 3.97 lb (1.80Kg.)

**DSP Logger MX 300**

**brings a new level to affordability and ease of use to vibration analysis**



# Data Collector Field Analyzer

## Route and out route

### Data Collector Module

This module is designed for predictive maintenance work, allowing perform measurement routines in a set of equipments on fully automatic mode.

It uses all the memory capacity of the DSP Logger MX300, transferring previously loaded control routines at high speed.

The capacity of the data collector module allows transfer of a large amount of equipment depending on the spectral resolution set, surpassing 16,000 spectrums and more than 120,000 global values.

To increase the speed of data acquisition, the collector can operate automatically doing the routine inspection.

The use of this function is extremely simple, requiring minimal intervention from the operator, who shall follow the indications of the instrument to change equipment or measurement point.

In automatic mode, the collector takes the measurements and the operator shall confirm them. Upon completion of point measurements, notifies and indicates the next point to be measured.

At the end of the measurements in all points of the equipment, indicates which is the next equipment to be measured according to the established configuration.

The module shows in each transfer the record of the last measurement taken, global or spectral values to be compared at the time of new inspection.

### Measurements available on route and out route:

Acceleration: rms, o-peak, peak-peak waveform and spectra.

Speed: rms, o-peak, peak-peak waveform and spectra.

Displacement: rms, o-peak, peak-peak waveform and spectra.

Envelope: rms, o-peak, peak-peak and spectra.

Amperometric clamp: rms, o-peak, peak-peak, spectra.

AC amplitude: rms, o-peak, peak-peak waveform and spectra.

CC amplitude: rms, o-peak, peak-peak waveform and spectra.

Ultrasound: rms, o-peak, peak-peak waveform and spectra.

Inductive Sensors: rms, o-peak, peak-peak waveform and spectra.

Thermometers and values 4-20mA.

### Out route Module

The vibration analyzer and out route measurement module allows all types of spectral and scalar measurements, setting at the field the parameters needed for the application. Its versatility and ease of use make it a complete vibration analyzer, current and AC signals. All measurements configured in this module can be stored in the equipment memory, be edited or be transferred to a PC for more complete analysis.

### spectrum tools

All spectral measurements have different tools for analysis and visualization of spectra acquired.

More important:

Graph Zoom of amplitude and frequency.

Maximun peak cursor and mobile, indicates frequency and amplitude point.

Harmonic selected by cursor point

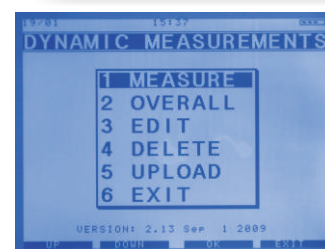
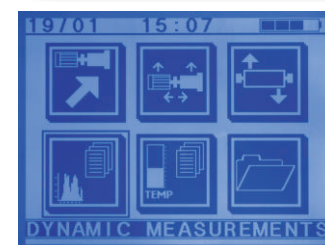
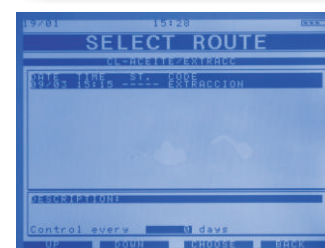
Measurement of spectrum with active zoom windows.

Sample values of harmonics on spectra, when configuring the point RPM, helping the detection of harmonic values

Displays bearing energy values and lubrication in acceleration spectra

### Accessories available for measurement

- ☐ Accelerometer Sensors 50.100 and 500 mV / g.
- ☐ Dual Accelerometer Sensor 100mV/g and 10mV / ° C
- ☐ 1000 amp amperometric clamp .
- ☐ Infrared thermometer with laser pointer (-32 to 250 ° C or 450 ° C)
- ☐ Hearing Protectors with headphones for stethoscope function.
- ☐ Inductive sensors for measuring vibration.



ACCELERATION [G]		
	MEASUREMENT	MEASUREMENT
RMS	0.0232	0.0164
PEAK	0.1742	0.2167
VELOCITY [MM/S]		
	MEASUREMENT	MEASUREMENT
RMS	19.812	5.9817
PEAK	74.695	62.172
1X	9.1686	2.1003
2X	1.1109	0.5779
5X	0.1860	0.0902

# Balancing Phase Analyzer

## 2 Channels simultaneous

### BALANCING MODULE

Balancing module and machines balance

The balancing module of the DSP Logger MX 300 incorporates more accurate calculations for balancing machines, due to its powerful digital processing technology.

By a very simple procedure, which requires only the placement of an optical sensor to calculate phase and two readings of vibration for both planes, you get fast and accurate balancing.

The use of balancing program is easy to learn and operate, it can solve the problems of imbalances in minutes.

### Usefulness of reports

The balancing module of the MX 300 DSP Logger has a very handy tool to record pre and post condition of the rolling process or balance.

Once set the parameters for the rolling operative, the system automatically measures and stores in memory a spectrum for each balance plane. Same does at the end of the process, giving an initial and final balancing spectral report.

Besides these data, it also contains the spectra measured before and after rolling.

### ISO 1940 QUALITY OF BALANCING

A new utility allows you to load data required by ISO 1940 to assure the quality of the balance, indicating the result as per standard

### Balancing report partial:

In the field of balancing, sometimes situations occur which may temporarily stop a rolling process, either by a machine out of service or a long time startup or shutdown turbine. For these cases the balancing module can restart the balance process, picking up from memory a report already begun. This allows the operator not to lose the work done previously.

### PHASE ANALISYS MODULE

Vibration phase measurement is a powerful tool for diagnosing machinery problems.

In machines with coupling, sometimes is difficult to distinguish between inbalance and misalignment based only on data from the vibration spectrum analysis, avoiding the study of some mechanical problems with certainty.

So, you would waste a time trying to balance a misaligned machine, or perform a force balancing, when in reality it is a couple problem.

To exactly know this kind of problem, the best way to take the measurement is a two channel analyzer, as offered by the DSP Logger MX300, measuring the two signals of the acelerometers without requiring a tachometer or other reference phase trigger.

### Analyze

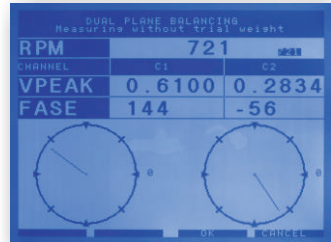
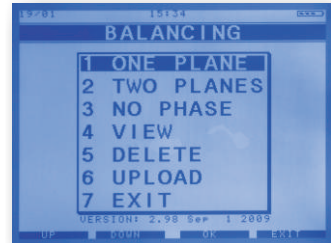
The phase analysis function only requires some parameters, the equipment name and estimated RPM.

With this data, the system tunes the filters needed to perform phase analysis.

The application screen clearly shows the RPM of the equipment analyzed in real time.

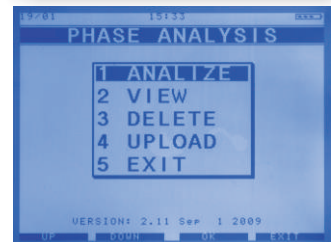
The vibrational values of each point in RPM speed and 0-Peak, also include a polar plot indicating the position of the measured phase.

The phase difference between the points analyzed can be clearly seen in a window.



DUAL PLANE BALANCING					
Measuring with correction weight					
RPM 721					
PLANE 1			PLANE 2		
CH	RPM	PH	CH	RPM	PH
1	0.5205	144	2	0.2834	-56
2	0.5205	144	2	0.2834	-56
Corrected:					
1	0.5205	144	2	0.2834	-56
Correction: 46.393 111 15.858 -107					

TOTAL CORRECTION			
PLANE 1		PLANE 2	
MASS	46.393	15.858	
PHASE	111.27	-107.28	



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