SE-98H Dynamic Stress-strain Testing and Analysis System

DESCRIPTION

The SE-98H Dynamic Stress-strain Test and Analysis System is specially designed for the strength and life evaluation test of large structures. It adopts the 19-inch standard chassis structure and is extended by Ethernet switches.

A single computer can realize the parallel and synchronous testing and analysis of quasi-dynamic and dynamic stress and strain signals in infinite channels.

Widely used in aerospace, automotive industry, mechanical engineering, rail transit and other industries of various structure performance testing and analysis.

Support synchronous loading with MOOG's loading testing machine online.

FEATURES

Modular design, flexible configuration of different DAQ cards, Ethernet communication to achieve unlimited channel expansion;

Suitable for cabinet installation, to form a centralized test system;

Support online synchronous loading with various loading testing machines to form a centralized test system, which can be used for fatigue test of large structures;

Support intelligent wire identification function, convenient for large system measurement point information editing and setting;

Ethernet communication, real-time communication with the computer, can record multi-channel signals for a long time in real time and without interruption, all channels work in parallel, SE-98H maximum sampling rate of 5kHz/ channel, the maximum sampling rate of different boards and cards mixed combination of 1kHz/ channel;

If the sampling rate is less than 500Hz, the network Time Protocol (NTP) synchronization mode is used to enable simultaneous communication and synchronization between the chassis and the switch through one network cable.

Sampling rate above 500Hz, using synchronous clock line serial synchronization;

Strong anti-interference ability, good stability;

Built-in standard resistance, software programmed to set the bridge state of full bridge, half bridge, three-wire system 1/4 bridge;

All channels automatic measurement wire resistance and correction function;

With strain bridge self-test function, can quickly know the current status of the channel;

SPECIFICATIONS

Number of Input Channel	8 channels per card, 8/16 card slots per chassis
Full-scale Voltage Value	±0.05V, ±0.5V, ±5.0V, ±10.0V
Strain Measurement	
Full-scale Strain Value	±50000µε
Min. Resolution	0.5µε
Indication Error	≤0.5%±3µε
Nonlinearity	0.05% of F.S.
Noise	≤1µεRMS
Zero Drift	<3µε/2h
Self-Balancing Range	±20000µε (±2% of strain gauge resistance)
Strain Gauge Sensitivity Coefficien	1.0 ~ 3.0 (Auto. calibrating)
Bridge Excitation	
Bridge Configuration	Full, half, three-wire quarter bridge
Bridge Completion Resistors	120Ω, 350Ω (Three-wire quarter bridge) 60Ω~20000Ω (Half bridge / Full bridge)
Bridge Voltage	2V, 5V, 10V DC
Accuracy	<0.1%
Stability	<0.05/h
Max. Output current	20mA/CH
LPF	
Transfer Characteristic	6th order Butterworth and Chebyshev filter
Cut-off Frequency	10Hz, 30Hz, 100Hz, 300Hz, PASS
Anti-aliasing Filter	
Cut-off Frequency	1/2.56 of sampling rate
Stop-band Attenuation	>-100dB
Flatness	<0.1dB (Within analysis frequency range)
A/D Converter	24 bits
Freq. Response	DC ~ 1kHz
Sampling Rate	Single Chassis:1Hz, 2Hz, 5Hz, 10Hz, 20Hz, 50Hz. 100Hz. 200Hz. 500Hz. 1kHz. 2kHz. 5kHz Multiple-Chassis(with NTP)：1Hz, 2Hz, 5Hz, 10Hz, 20Hz, 50Hz, 100Hz, 200Hz, 500Hz per channel Multiple-Chassis(with NTP)：1Hz, 2Hz, 5Hz, 10Hz, 20Hz, 50Hz, 100Hz, 200Hz, 500Hz, 1kHz. 2kHz. 5kHz per channel
Communication	Ethernet NTP (sampling rate below 500Hz)
Synchronization	Synchronous Clock Cable (sampling rate below 5kHz)
Power Supply	220VAC/10 ~ 30VDC, 160W (64 channels) / 200W (128 channels)
Dimensions	
Semi-19" Chassis	236×133×338mm
19" Chassis	482×133×338mm
Weight	
Semi 19" Chassis (64 channels)	Approx. 8kg
19" Chassis (128 channels)	Approx. 12kg
Environmental Conditions	
Operating Temperature	0°C to 40°C

SYSTEM CONFIGURATION

Figure 1 Single System Block Diagram

Figure 2 Multiple System Block Diagram

SOFTWARE

DE-BSP Basic platform software
Running on XP/Win7/Win8/Win10 operating system.
Parameters setting, Function control, Real-time/post-acquisition analysis, data browsing, cursor readouts, scaling curve, data management and simple processing, report generation, long-term continuous data recording, etc.

MODULES / ACCESSORIES

SE-98H DAQ Card
8 channels,
Simultaneous sampling of all channels,
Maximum continuous sampling rate of 5kHz per channel,
Programmed to set the full bridge, half bridge, 1/4 bridge (three-wire system) bridge state,
Individual 24-bit A/D converter per channel,
Support intelligent wire identification,
Automatic wire resistance correction.

DE-92U Semi-19" 3U Chassis
8 Card Slots
Including control card, 100 Megabit Network communication Interface
100 ~ 240VAC / 12VDC power supply
DE-93U 19" 3U Chassis
16 card slots
Including control card, 100 Megabit Network communication Interface
100 ~ 240VAC / 12VDC power supply
DT5611A Synchronization Box (Optional)
8 inputs
Built-in synchronization clock distributor
Support multiple clock box cascade connection
19" 1.5U chassis.
DT5857-9 Differential Charge Conditioning Unit (Optional)
1 differential input channel
Full-scale charge Value: 103pC, 105pC
Frequency response: 0.3Hz ~ 300kHz

DT5855-8 Charge Conditioner (Optional)
1 differential input channel
Full-scale charge value: 103pC, 105pC
Frequency response: 0.3Hz ~ 300kHz
Quadratic integral
DT5856-8 IEPE Conditioner (Optional)
Built-in 24V/4mA biasing circuit
Frequecy response: DC ~ 300kHz
Quadratic integral
DT5857-8 Charge Conditioner (Optional)
1 input channel
Full-scale charge Value: 103pC, 105pC
Frequency response: 0.3Hz ~ 300kHz/1MHz

DT3811-8 Current Loop Conditioner (Optional)
1 input channel
Suitable for 2-wire / 3-wire 4 ~ 20mA sensor
24V DC power supply

DT3814-8 Thermistor Conditioner (Optional)
1 input channel
Suitable for Pt10, Pt100, Pt1000 sensors
Measuring temperature range from -200°C to 850°C
Accuracy: 0.5%±0.5°C
Iout:1mA±2µA

DT5942 Tachometer Card (Optional)
Number of channel：2 input channels
Range: 30 ~ 300000 rpm / 5 ~ 20000 rpm
PPR: 1 ~ 512

DT5943 Counter Card (Optional)
Number of channel：2 input channels
Access to various pulse output counter, used for measuring revolving speed, pulse or frequency

DT5944 Signal Source Output Card (Optional)
Number of Channel: 2 channels
Voltage Range: ±10VP

		Operating Humidity	20 ~ 90%RH@40°C		Current: Max. 5mA Frequency: 0.1 ~ 20kHz D/A Resolution: 24 bits Accuracy: 1% within 2kHz Signal type: constant frequency sine wave, sweep frequency sine wave, square wave, random, burst random **DT5945 CAN Bus Card (Optional)** Number of channel：2 channels Protocol: CAN2.0B Baud rate: 4800bps ~ 1Mbps Communication mode: duplex CAN bus for sending and receiving Minimum sending interval: 1s Support dbc file import Supports standard and extended frame formats **DT5947 Digital I/O Card (Optional)** Number of channel: 8-Ch DI or 8-Ch DO Digital input: Support Dry/Wet Contact Digital output: Power Output (Ch1-Ch4) and TTL Output (Ch5-Ch8) Power Output: Max. 24V/1A **C-4 Cable** 4-core cable Default 5m bare cable or 1.5 m cable with bridge box
		Storage Temperature	- 40°C to 60°C		
		Storage Humidity	90%RH24h@50°C		
		Vibration	Frequency cycle range: 5Hz ~ 55Hz ~ 5Hz Drive amplitude (peak): 0.19mm Sweep frequency: ≤1Oct./min Duration of resonant: 10min Vibration direction: x. v. z		