



## RU-846 Rugged Data Recorder

DESCRIPTION	FEATURES	SPECIFICATIONS	SYSTEM CONFIGURATION	SOFTWARE	MODULES / ACCESSORIES
<p>The RU-846 Rugged Data Recorder, made of aluminum alloy with mini size, lighter weight and strong impact resistance, specially designed for vehicles, airborne, shipboard and other occasions with narrow installation space. RU-846 adopts modular combination design. Extended via USB hub, RU-846 can be used for parallel and synchronous test and analysis of 96 channels dynamic signals by a single computer, and widely used for performance test and analysis of various structures in aerospace, weapons, automotive engineering, sports safety equipment and other industries.</p>	<p>The Data Recorder adopts modular design and consists of a control layer, an acquisition layer and a power layer</p> <p>Micro testing system, 16 channels, size: 55mm×62mm×82mm, weight: 350g</p> <p>Up to 500g impact resistance and -20°C~+60°C operation temperature</p> <p>Up to 4 modules (16 channels) are supported by a single system, including the module of IEPE, charge, strain, or custom combination</p> <p>USB communication, built-in 32GB high-speed storage, up to 128kHz/ch sampling rate</p> <p>Up to 6 systems, each with 16 channels, can run synchronously</p> <p>Independent 16-bit A/D converter per channel</p> <p>Support online and offline working modes, online or offline continuous or triggered acquisition, post-event data recovery</p> <p>Software settable bridge modes such as full-bridge, half-bridge, and three-wire quarter bridge, easy to use</p> <p>Support intelligent wire identification and TEDS sensors</p> <p>Powered by built-in lithium battery pack power supply (optional) or external 10~36V DC power supply</p> <p>The sampling control and analysis software, which runs on Windows XP/7/8/10 OS, has word document activity reporting function and multiple view display modes such as recorder, x-y recorder, color waterfall chart, color cloud chart, instrument panel, bar chart, digital table, audio and video, 3D model chart, etc.</p>	<p><b>Strain Acquisition Module</b></p> <p><b>Number of Input Channels</b> 4 channels</p> <p><b>Input Mode</b> Differential balance input</p> <p><b>Input Impedance</b> 10MΩ+10MΩ</p> <p><b>Full-scale Voltage Value</b> ±0.125V, ±0.25V, ±0.5V, ±1.25V, ±2.5V</p> <p><b>Full-scale Strain Value</b> ±2500με, ±5000με, ±12500με, ±25000με, ±50000με</p> <p><b>Indication Error</b> ≤0.5% of F.S.</p> <p><b>Nonlinearity</b> ≤0.1% of F.S.</p> <p><b>Minimum Resolution</b> &lt;1με</p> <p><b>CMR</b> ≥100dB</p> <p><b>Bridge Voltage</b> 2V</p> <p><b>Bridge Configuration</b> Full bridge, Half bridge, Three-wire Quarter bridge (Default 120Ω)</p> <p><b>Auto-balancing Range</b> ±20mV</p> <p><b>Freq. Response</b> DC ~ 20kHz (+0.5dB ~ -3dB)</p> <p><b>A/D Converter</b> 16 bits</p> <p><b>Anti-aliasing Filter</b></p> <ul style="list-style-type: none"> <li>Cut-off Frequency: 1/2.56 of sampling rate</li> <li>Stop-band Attenuation: -100dB/Oct.</li> <li>Flatness: ±0.05dB (Within analysis frequency range)</li> </ul> <p><b>Dimensions</b> 55mm(L)×61mm(W)×10mm(H) (Inclu. protruding connectors)</p> <p><b>Power Consumption</b> 2W</p> <p><b>Voltage/IEPE Acquisition Module</b></p> <p><b>Number of Input Channel</b> 4 channels</p> <p><b>Input Mode</b> IEPE, AC</p> <p><b>IEPE Power</b> 4mA/24V</p> <p><b>Full-scale Voltage Value</b> ±0.05V, ±0.5V, ±5.0V</p> <p><b>Indication Error</b> ≤0.5% of F.S.</p> <p><b>Freq. Response</b> 1Hz ~ 20kHz (+0.5dB ~ -3dB)</p> <p><b>A/D Converter</b> 16 bits</p> <p><b>LPF</b></p> <ul style="list-style-type: none"> <li>Cut-off Frequency: 30Hz, 300Hz, 3kHz, PASS</li> <li>Stop-band Attenuation: &gt;-18dB/Oct.</li> <li>Flatness: &lt;0.1dB (Within 1/2 cut-off frequency)</li> </ul> <p><b>Anti-aliasing filter</b></p> <ul style="list-style-type: none"> <li>Cut-off Frequency: 1/2.56 of sampling rate</li> <li>Stop-band Attenuation: -100dB/Oct.</li> <li>Flatness: ±0.05dB (Within analysis frequency range)</li> </ul> <p><b>Dimensions</b> 55mm(L)×62mm(W)×10mm(H) (Inclu. protruding connectors)</p> <p><b>Weight</b> Approx. 41g</p> <p><b>Power Consumption</b> 1.75W</p> <p><b>Charge Acquisition Module</b></p> <p><b>Number of Input Channel</b> 4 channels</p> <p><b>Input Charge Range</b></p> <ul style="list-style-type: none"> <li>Full-scale Value (Charge Sensitivity: 1mV/mC) ±50pC, ±500pC, ±5000pC</li> <li>Full-scale Value (Charge Sensitivity: 0.1mV/mC) ±500pC, ±5000pC, ±50000pC</li> </ul> <p><b>Indication Error</b> ≤0.5% of F.S.</p> <p><b>A/D Converter</b> 16 bits</p> <p><b>Freq. Response</b> 0.5Hz ~ 20kHz (+0.5dB ~ -3dB)</p> <p><b>LPF</b></p> <ul style="list-style-type: none"> <li>Cut-off Frequency: 30Hz, 300Hz, 3kHz, PASS</li> <li>Stop-band Attenuation: &gt;-18dB/Oct.</li> <li>Flatness: &lt;0.1dB (Within 2/3 cut-off frequency)</li> </ul> <p><b>Anti-aliasing Filter</b></p> <ul style="list-style-type: none"> <li>Cut-off Frequency: 1/2.56 of sampling rate</li> <li>Stop-band Attenuation: -100dB/Oct.</li> <li>Flatness: ±0.05dB (Within analysis frequency range)</li> </ul>	<p><b>SYSTEM CONFIGURATION</b></p> <p>The diagram illustrates the system configuration for a multi-system standalone working block. It shows a central RU-846 unit connected to various sensors and a Synchronous clock controller. The sensors include Strain Gauge, Bridge Sensor, PE Accelerometer, PE Triaxial Accelerometer, Magnetolectric Velocity Sensor, and IEPE Accelerometer. The Synchronous clock controller is connected to the RU-846 units via USB. The diagram also shows the connection of the RU-846 units to a laptop via USB.</p>	<p><b>DE-BPS Basic Platform Software</b></p> <p>Running on XP/Win7/Win8/Win10 operating system</p> <p>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.</p>	<p><b>MODULES / ACCESSORIES</b></p> <p><b>RU-846-S Strain Acquisition Module</b></p> <ul style="list-style-type: none"> <li>4 input channels</li> <li>Software-selectable full-scale voltage value from ±0.125V to ±2.5V</li> <li>Software-selectable full-scale strain value from ±2500με to ±50000με</li> <li>Software-selectable full bridge, 1/2 bridge or 1/4 bridge (3-wire) mode</li> <li>Independent 16-bit A/D converter and dedicated DSP real-time signal processing system per channel</li> <li>16 channels input simultaneously, the sampling rate up to 128kHz/channel</li> </ul> <p><b>RU-846 IEPE Acquisition Module</b></p> <ul style="list-style-type: none"> <li>4 input channels</li> <li>Built-in 24V/4mA bias current</li> <li>Software-selectable full-scale voltage value from ±0.05V to ±5.0V</li> <li>Independent 16-bit A/D converter per channel</li> <li>16 channels input simultaneously, the sampling rate up to 128kHz/channel</li> <li>Built-in low-pass filter and anti-aliasing filter</li> </ul> <p><b>RU-846 Charge Acquisition Module</b></p> <ul style="list-style-type: none"> <li>4 input channels</li> <li>Software-selectable full-scale charge value from ±50pC to ±5000pC with the sensitivity of 1mV/pC and from ±500pC to ±50000pC with the sensitivity of 0.1mV/pC</li> <li>16 channels input simultaneously, the sampling rate up to 128kHz/channel</li> <li>Built-in low-pass filter and anti-aliasing filter</li> </ul> <p><b>RU-846 Acquisition Control Module</b></p> <ul style="list-style-type: none"> <li>Up to 4 controlled modules</li> <li>Built-in 32gb high-speed memory</li> <li>Up to 128kHz/channel</li> <li>USB2.0 communication</li> </ul> <p><b>RU-846 Li-battery Module</b></p> <ul style="list-style-type: none"> <li>Intelligent rechargeable lithium battery</li> <li>Optional battery capacity of 2000mAh, 4000mAh, 6000mAh</li> </ul> <p><b>RU-846 Synchronization Controller (Optional)</b></p> <ul style="list-style-type: none"> <li>Built-in synchronization clock and rechargeable lithium battery pack</li> <li>USB 3.0 switch</li> <li>Optional of 3+1, 6+1 and 9+1 ports</li> </ul> <p><b>Wire Controller (Optional)</b></p> <ul style="list-style-type: none"> <li>Used to control the recorder for standalone data acquisition</li> <li>Control power switch</li> <li>Control balance and acquisition</li> </ul> <p><b>C-4 Signal Input Cable</b></p> <ul style="list-style-type: none"> <li>Five core shielded cable</li> <li>Default 1m bare cable</li> </ul>

Figure 3 Multi-system Standalone Working Block Diagram

<b>Dimensions</b>	55mm(L)×62mm(W)×10mm(H) (Inclu. protruding connectors)
<b>Weight</b>	Approx. 39g
<b>Power Consumption</b>	1.5W
<b>Acquisition Control Module</b>	
<b>Number of Controlled Modules</b>	Up to 4 controlled modules
<b>Storage</b>	32G
<b>Sampling Rate</b>	Up to 128kHz/channel
<b>Supply Voltage</b>	External 10 – 30V DC
<b>Communication</b>	USB2.0
<b>Dimensions</b>	55mm(L)×61mm(W)×21mm(H) (Inclu. protruding connectors)
<b>Weight</b>	Approx. 77g
<b>Power Consumption</b>	1W
<b>Li-battery Module</b>	
<b>Rechargeable Battery Capacity</b>	
Module 1	2000mAh, 1.5h
Module 2	4000mAh, 3h
Module 3	6000mAh, 4.5h
<b>Charging Time</b>	
Module 1	3h
Module 2	6h
Module 3	9h
<b>Dimensions</b>	
Module 1	55mm(L)×57mm(W)×20.5mm(H)
Module 2	55mm(L)×57mm(W)×37mm(H)
Module 3	55mm(L)×57mm(W)×57.5mm(H)
<b>Weight (module 1)</b>	Approx. 114g
<b>Environmental Conditions</b>	
Operating Temperature	-20°C – 60°C
Operating Humidity	5 – 90%RH@50°C
Storage Temperature	-40°C – 70°C
Storage Humidity	90%RH48h@60°C
Vibration	Frequency cycle range: 5Hz – 55Hz – 5Hz Drive amplitude (peak): 0.19mm Sweep frequency: ≤ 10ct./min Duration of resonant: 20min