

## SMU Series 24 to 64 Channel High-Precision, Universal Measuring System

### FEATURES

- 24/32/40/48/56/64-Channel utilizing low-noise 24-bit ADCs
- Sampling up to 1000 Samples/sec/Channel
- All channels are Software-Selectable for supporting different sensor/transducers:
  - Strain-Gauge(Quarter-, Half- and Full-Bridge)
  - Strain-Gauge Based Transducer
  - Potentiometer and MEMS sensor
- Suitable for both dynamic and static sampling(0.1-1000 samples/sec/channel)
- High-precision stable complement resistors for strain measurement on each channel
- USB interface for connecting to PC
- Configuring, Controlling and Acquiring data from the SMU Series is done by *SoftLogger* Software



### Description and Applications

SMU-24/32/40/48/56/64 is a high-precision, data acquisition system intended for both static and dynamic test and measurement applications including:

- Laboratory Test and Measurement
- Strain Measurement
- Low-frequency Vibration Measurement

SMU-24/32/40/48/56/64 supports different types of sensor/transducers and is suitable for test and measurement applications where there are numerous sensor/transducers. Each channel can be defined, via software, to be one of the following sensor types:

- Strain-Gauge(Quarter-, Half- and Full-Bridge)
- Strain-Gauge-Based Transducer(Load Cell, Accelerometer, Displacement Transducer, ...)
- Potentiometer
- MEMS Voltage-Based Sensor(Accelerometer, Pressure Sensor, ...) and Voltage

### STRAIN GAUGE SUPPORT

SMU-24/32/40/48/56/64 has special features that made it a suitable tool for simple, fast and accurate strain measurement.

- Each channel supports strain gauges in Quarter- Half- and Full-Bridge configurations.
- Supports Quarter-bridge in 3-wire circuit for eliminating cable resistance changes over temperature in long period measurements.
- Supports Half-bridge in 5-wire circuit for eliminating cable resistances in long cables.
- Bridge configuration for each channel is selected through the *SoftLogger* Software.
- Each channel has high-precision 120-ohm completion resistor for Quarter-bridge configuration.
- R-Calibration capability

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### High-Precision SAMPLING

Each eight-channel has its own 24-bit analog-to-digital converter that scans them in a way that the maximum time interval between samples of the first and last channel is less than 400 microseconds.

Thanks to the use of a new-technology ADC, it is possible to achieve low-noise measurement even in high rate sampling. Supported sampling rates vs. noise are listed below:

Sampling Rate (Sample/sec/ch)	ADC Noise p-p Resolution(bits)	Total Scan Time(μsec)
0,1,0,2,0,5	18.7	Less than 400
1,2,5	18.7	Less than 400
10,20,50	18	Less than 400
100,200	18	Less than 400

### OTHER SPECIAL FEATURES

- Two excitation voltages per channel with short-circuit protection capability.
- Excitation circuitry utilizes feedback for counting voltage drops in long cables

### GENREAL INFORMATION

Power supply: 220VAC

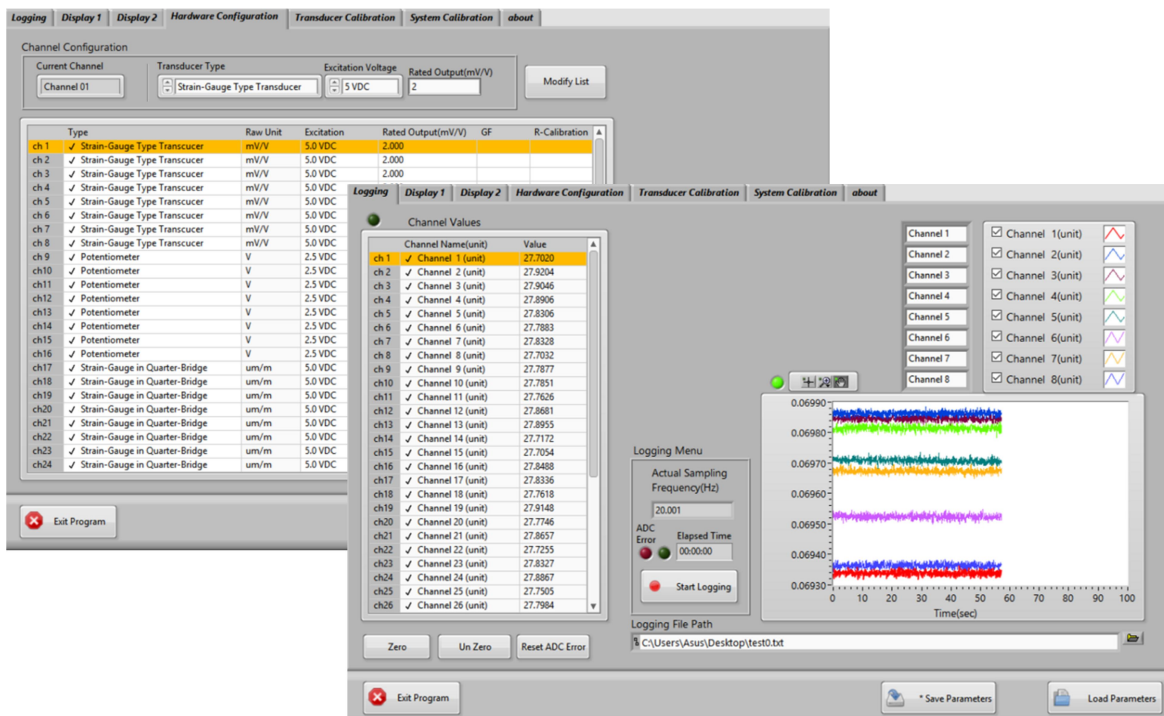
Dimensions: 35 × 21 × 38 cm

Accessories: USB cable and Power cable

### BlueApple-Log SOFTWARE

Configuring, controlling and acquiring data from the *SMU-24/32/40/48/56/64* is done by Windows®-based *SoftLogger* Software. *SoftLogger* has following features:

- Online monitoring of all channels
- Different selectable sampling frequencies from 0.1 to 1000 Sample/sec/Ch.
- Saving Data-files in ASCII format
- Easy and Fast Measurement
  - Simple menus for choosing sensor/transducer type(strain gauges, strain-gauge-based transducers, potentiometers, and voltage sensors)
  - Auto-zero button for each channel
  - Two-point calibration capability
  - Saving and restoring calibration settings



The screenshot displays the BlueApple-Log software interface. The top menu bar includes 'Logging', 'Display 1', 'Display 2', 'Hardware Configuration', 'Transducer Calibration', 'System Calibration', and 'about'. The main window is divided into several sections:

- Channel Configuration:** Shows 'Current Channel' as Channel 01, 'Transducer Type' as Strain-Gauge Type Transducer, 'Excitation Voltage' as 5 VDC, and 'Rated Output(mV/V)' as 2. A 'Modify List' button is present.
- Channel List Table:** A table listing 26 channels (ch 1 to ch 26) with columns for Type, Raw Unit, Excitation, Rated Output(mV/V), GF, and R-Calibration. Channels 1-8 are Strain-Gauge Type Transducer, and channels 9-26 are Potentiometer or Strain-Gauge in Quarter-Bridge.
- Channel Values:** A list of 26 channels with their current values, such as Channel 1 (unit) at 27.7020 and Channel 2 (unit) at 27.9204.
- Channel Selection Panel:** A vertical list of checkboxes for Channel 1 through Channel 8, each with a corresponding color-coded line graph icon.
- Logging Menu:** Includes 'Actual Sampling Frequency(Hz)' set to 20.001, 'ADC Error' status, 'Elapsed Time' at 00:00:00, and a 'Start Logging' button.
- Real-time Graph:** A plot showing multiple colored data series over a 100-second period. The y-axis ranges from 0.06930 to 0.06990.
- Logging File Path:** Shows the path 'C:\Users\Asus\Desktop\test0.txt'.
- Buttons:** 'Exit Program', 'Zero', 'Un Zero', 'Reset ADC Error', 'Save Parameters', and 'Load Parameters' are visible at the bottom.