



KL-620

Basic Sensor Experimental Lab



*Notebook is excluded.

The KL-620 Basic Sensor Experimental Lab is a comprehensive sensor / transducer control training system. Its modular and closed-loop control circuits allow implementation of open-ended, individual control loops used in industrial applications.

KL-620 provides qualitative experiments, it uses different sensors or transducers for experiments. With KL-620, we give attention to observe the relationship between analog signals (like temperature or pressure) and voltage. The analog signals (like temperature or pressure) can not be measured and represented by a value.

The KL-620 uses only industrial-standard sensors / transducers (0~10V, 4~20mA) with USB interface.

● Features

1. Industrial-standard sensors and transducers
2. With USB interface
3. Open-ended design, ideal for expansion
4. Offer a sensing data acquisition software

● Specification

Sensor Main Unit (KL-61001B)

1. Power Supply Unit
 - Fixed DC power supply
 - (1) Output voltage : +5V, -5V, +12V, -12V
 - (2) Max. output current : +5V/3A, -5V/0.3A, +12V/1A, -12V/0.5A
 - (3) With output overload protection
2. A/D Converter : 1x12-bit ADC
 - (1) Input voltage range : 0 ~ +5V
 - (2) Time pulse frequency : 3.58MHz
 - (3) Control signals : Status, pole, over range indication
3. Interface Port
 - USB interface : Type B
4. D/A Converter : 1x12-bit DAC
 - Analog output & control
 - OUT+ : +DC OFFSET 0 ~ +4.096V unipolar
 - OUT- : -DC OFFSET 0 ~ -4.096V unipolar
 - OUT BP : DC OFFSET -2.048V ~ +2.048V bipolar

5. Preset Level : 4-digit thumbwheel switch, Max. value : 4095

6. Status Display & DCV

Input voltage measurement

- (1) Range : 2000mV, 20V
- (2) Accuracy : $\pm 0.05\%$ of reading + 4 counts
- (3) Input impedance : 10M Ω
- (4) Display : 4 1/2 digits

7. Mode Selector

Manual/single-chip

8. Buzzer

Max. input signal voltage : +12V

9. Microcontroller Signals

5 Control line outputs

10. Model Holder : X4

11. Potentiometer : 100K Ω B-type

12. Comparator

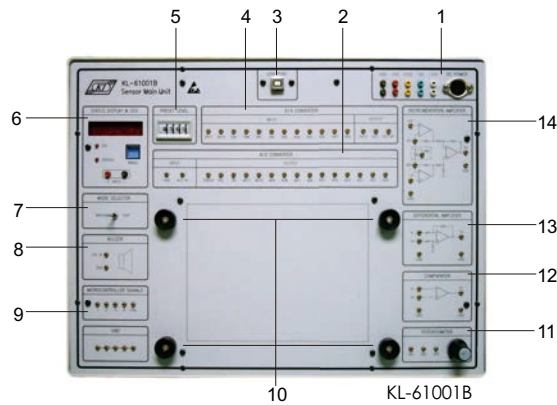
V-, V+ input, Vo output

13. Differential Amplifier

V-, V+ input, Vo output

14. Instrumentation Amplifier

V-, V+ input, Vo output, adjustable gain



KL-64001A



KL-64009



KL-64002



KL-64010



KL-64003A



KL-64011



KL-64004



KL-64012



KL-64005A



KL-64013



KL-64006



KL-64014



KL-64007A



KL-64015



KL-64008



KL-64016

Experiment Modules

1. Using 2mm plugs and sockets
2. Comprehensive experiment manual
3. Modules secured in plastic housings
4. Connected by 2mm-2mm test leads
5. Dimension : 255 x 165 x 30mm
6. Circuit symbols, blocks and components printed on the surface of each module
7. Power supplied from KL-61001B main unit

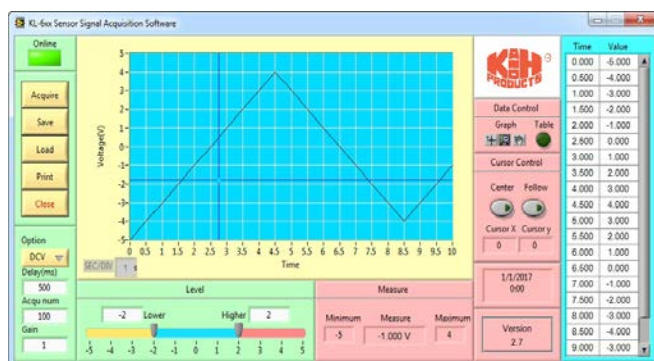
Graphic User Interface Software

System Requirement

1. PC : 1GHz or faster 32-bit (x86) or 64-bit (x64) processor, 1GB RAM, 1GB more free disk space
2. OS : Windows XP / Vista / 7 / 8 / 10

Specification & Feature

1. Real time acquire signal
2. Adjustable acquire frequency
3. Current, Min and Max value displayed
4. Data save, load and print function
5. X-axis : TIME / DIV
Y-axis : VOLT / DIV
6. Storage format : Excel format





List of Modules

KL-64001A

1. Photo transistor
2. Photo interruptor
3. Digital magnetic detector
4. Analog magnetic detector

KL-64002

1. Pyroelectric detector
2. Reed switch
3. Thermistor
4. Mercury switch

KL-64003A

1. Limit switch
2. Vibration switch
3. Condenser microphone
4. Dynamic microphone

KL-64004

1. Gas/smoke sensor
2. Ethanol sensor

KL-64005A

1. IC (AD590) temperature sensor
2. Humidity sensor
 - (1) Humidity transducer rated voltage : 1Vpp AC
 - (2) Frequency range : 100Hz ~ 10KHz
 - (3) Temperature range : 0°C ~ 60°C
 - (4) Humidity range : 20% RH ~ 90% RH
 - (5) Impedance : 13K Ω (70% RH at 25°C)

KL-64006

1. Infrared TX / RX sensor
 - (1) Infrared transmitter : Emission intensity : 12mW/sr
(If = 50mA)
Emission wavelength : 940nm
(If = 50mA)
 - (2) Infrared receiver : Sensitivity wavelength : 1000nm
2. Ultrasonic TX / RX sensor
 - Nominal frequency : 40KHz

KL-64007A

1. Pressure sensor
 - 0~7 psi to 0~30 psi pressure ranges
2. Strain gauge
 - (1) Max. payload : <5kg
 - (2) Terminal resistance : 350 $\pm$ 50 Ω

KL-64008

1. Hall current sensor
 - (1) Nominal current : $\pm$ 3A
 - (2) Current range : $\pm$ 9A
 - (3) Output voltage : $\pm$ 4V, RL = 10K Ω
2. Proximity sensor
 - (1) Operation voltages : 10V ~ 30V DC
 - (2) Short circuit protection

KL-64009

1. CDS sensor
2. Photovoltaic sensor
 - (1) Photovoltaic transducer open voltage $\approx$ 2V
 - (2) Photovoltaic transducer close current $\approx$ 0.06 μ A/lx

KL-64010

1. V/F converter
 - (1) Input voltage : +10mV ~ +10V
 - (2) Output frequency : 5Hz ~ 5KHz, 10Hz ~ 10KHz

KL-64011

1. F/V converter
 - (1) Input frequency : 0 ~ 4.3KHz ($\pm$ 0.2Vp ~ $\pm$ 5Vp)
 - (2) Output voltage : 0 ~ 4.3V DC

KL-64012

1. RTD (PT-100)
 - (1) 0°C : 100 Ω , 100°C : 139.16 Ω
 - (2) Rating : 250°C

KL-64013

1. Level (Water)
 - Simulation of the reservoir control status(motor included)

KL-64014

1. Fiber optic emitter
 - (1) Forward current, DC (If) : 50mA
 - (2) Peak wave length : 950nm
 - (3) Output power : 50 μ w
2. Fiber optic phototransistor
 - (1) λ peak : 850nm
 - (2) Collect current (Ic) : 50mA
 - (3) Power dissipation : 100mw



KL-64015

1. LVDT

- (1) Range : $\pm 5\text{mm}$
- (2) Scale : 0.01mm
- (3) Optimum frequency : $50\text{Hz} \sim 1.1\text{KHz}$
(Nominal : 350Hz)

KL-64016

1. Rotation angle sensor

- (1) 10 turns (3600°) precision potentiometer
- (2) Linearity : $\pm 0.25\%$

List of Experiments

1. D/A and A/D Converters
2. Characteristics of Sensors
3. Gas Sensors
4. AD590 Temperature Transducer
5. Hall Current Sensor
6. PT100 Temperature Sensor
7. Humidity Sensor
8. Strain Gauge
9. Linear Variable Difference Transformer (LVDT)
10. Photovoltaic Cell
11. Proximity Switch
12. Infrared Transducer
13. Ultrasonic Transducer
14. Pressure Sensor
15. V/F and F/V Converters
16. CdS Cell
17. Level Controller
18. Fiber Optical Communication
19. Rotation Angle Sensor

● Accessories (KL-68013)

1. Experimental Manual
2. Connection Leads and Plugs x 1 set