

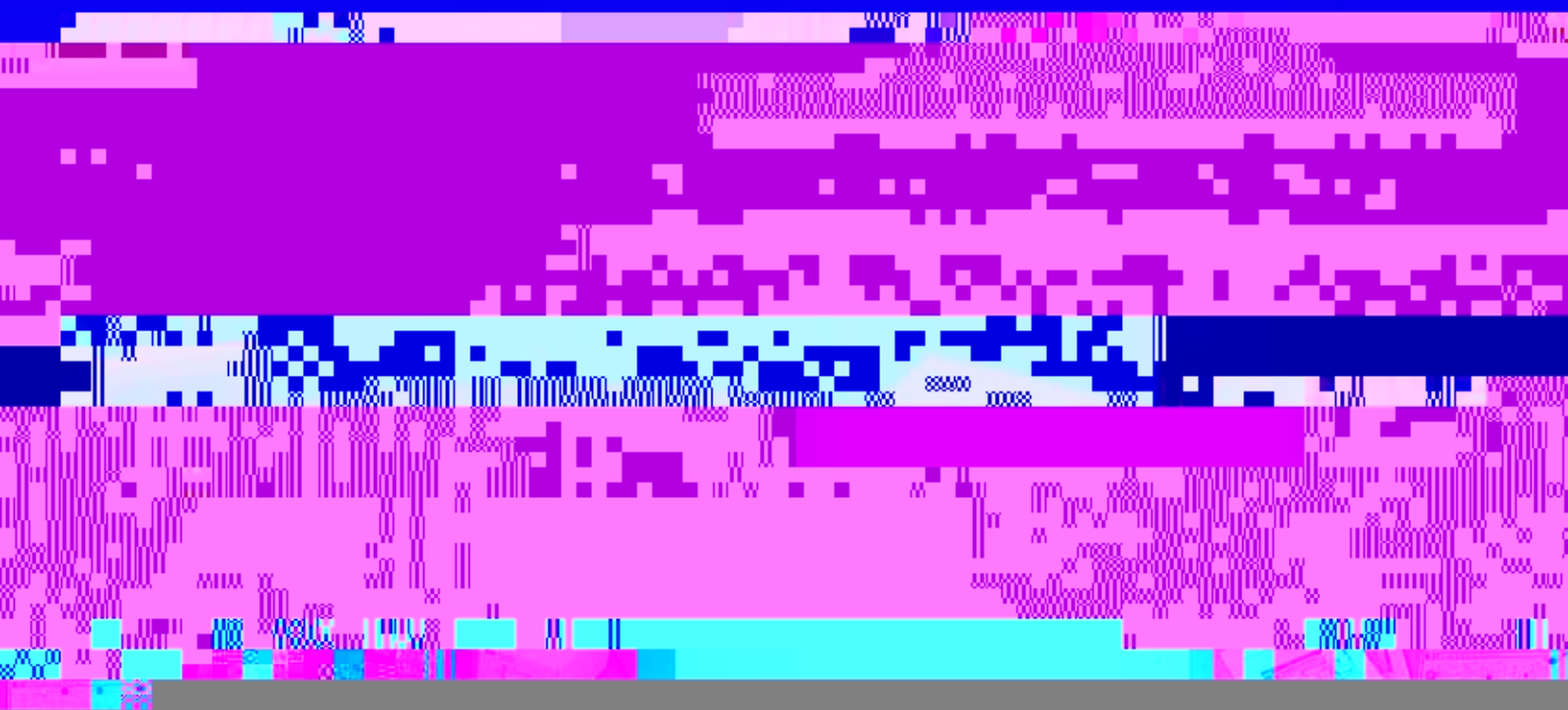
AL-Masafa CO. LTD



شركة المسافة

General Trading

التجارة العامة





KL-600

KL-61001 Main Unit



SPECIFICATION

Main Unit (KL-61001)

- Power Supply Unit**
Fixed DC Power Supply
(1) Output Voltage: +5V, -5V, +12V, -12V
(2) Max. Output Current:
+5V/3A, -5V/0.3A, +12V/0.3A, -12V/0.3A
(3) With output overload protection
- Interface Ports**
(1) PIO Interface:
1 x 25pin D-sub connector
(2) RS-232C Interface:
1 x 25pin D-sub connector
(3) Bus & PIO Interface:
1 x 60pin connector
- Status Display & DCV**
(1) Input Voltage Measurement
A. Range: 2000mV, 20V
B. Accuracy: $\pm 0.05\%$ of reading + 4 counts
C. Input Impedance: 10M Ω
D. Display: 4-1/2 digits
(2) Sensor Input Measurement
A. Sensor Types: TEMP, %RH, LUX, WEIGHT, AUX
B. Accuracy: $\pm 0.05\%$ of reading + 4 counts
C. Display: 4-1/2 digits
- Preset Level:** 4-digit thumbwheel switch,
Max. value: 4095
- Single-Chip & EPROM**
(1) Single-Chip Processor: 8031
(2) 8 Control Line Outputs
(3) DRAM: adjustable sensor reference value
ZIP sockets for both single chip processor & EPROM
(4) EPROM: 2764
- D/A Converter:** 1 x 12-bit DAC
(1) Resolution: 1.22mV/bit
(2) Analog Output & Control
OUT + : +DC OFFSET 0V - +4.096V unipolar
OUT - : -DC OFFSET 0V - -4.096V unipolar
OUT BP : DC OFFSET -2.048V - +2.048V bipolar
- A/D Converter:** 1 x 12-bit ADC
(1) Resolution: 1.22mV/bit
(2) Input Voltage Range: 0 - +5V
(3) Time Pulse Frequency: 3.579545 MHz
(4) Control Signals:
state, pole, over voltage indication
- Amplifiers**
(1) Instrumentation Amplifier:
 $\pm V_i$ input, V_o output, adjustable gain
(2) Differential Amplifier: $\pm V_i$ input, V_o output
(3) Comparator: $\pm V_i$ input, V_o output
(4) Alarm Amplifier: buzzer with driver circuit
- Selectors**
(1) PIO/Single-Chip Selector
(2) Manual/Single-Chip Selector
- Potentiometer:** 100K Ω , B-type
- Accessories**
(1) PIO interface card
(2) Demo disk
(3) Connect Leads: A. 0.65mm-0.65mm, 150mmL, 10pcs
B. 0.65mm-0.65mm, 300mmL, 15pcs
(4) Cable: A. 25P-25P (F-F) 100cmL, 1pc
B. 25P-25P (F-M), 100cmL, 1pc
(5) User's manual
(6) Fuse
(7) AC cord
(8) Anti-Dust cover



Experiment Modules

KL-600



FEATURES:

1. 2mm plugs and sockets used throughout
2. Comprehensive experiment manuals
3. Modules secured in plastic housings
4. Connection by 2mm-0.65mm test leads
5. Dimension: 255 × 165 × 30mm
6. Circuit symbols, blocks and components printed on the surface of each module
7. Power supplied from either power module or through KL-61001 main unit

1. List of Modules

- KL-63001 Sensor Module
- KL-63002 General Transducer Module
- KL-63003 AD590 Transducer Module
- KL-63004 Thermocouple Transducer Module
- KL-63005 PT-100 Temperature Transducer Module
- KL-63006 Humidity Transducer Module
- KL-63007 Load-Cell Transducer Module
- KL-63008 LVDT Transducer Module
- KL-63009 Photovoltaic Transducer Module
- KL-63010 Counter Module
- KL-63011 Linear Scale Module
- KL-63012 Infrared Transducer Module
- KL-63013 Multi-Channel Remote Controlled Module
- KL-63014 Ultrasonic Transducer Module
- KL-63015 Pressure Sensor Module
- KL-63016 VFC Module
- KL-63017 FVC Module

2. List of Experiments

(1) Characteristics of Various Sensors

- | | |
|--------------------------|-------------------------|
| A. Photodiode | G. Inclination Sensor |
| B. Photo-Interruptor | H. Limit Switch |
| C. Magnetic Sensor | I. Mercury Switch |
| D. Pyroelectric Detector | J. Vibration Switch |
| E. Thermistor | K. Condenser Microphone |
| F. Reed Switch | L. Dynamic Microphone |

(2) General Sensor Characteristics Experiments

- | | |
|-----------------------|--------------------------|
| A. Gas/Smoke Detector | C. Hall-Effect (Analog) |
| B. Ethanol Sensor | D. Hall-Effect (Digital) |

(3) AD590 Temperature Transducer Experiments

- A. AD590 Characteristics & Converter Circuit
- B. Boiler Temperature Control
- C. Digital Thermometer
- D. Computer I/O Interface Control
- E. Single-Chip Microprocessor Control

(4) Thermocouple Temperature Transducer Experiments

- A. Thermocouple Characteristics Curve & Converter Circuit
- B. Fire Alarm
- C. Digital Thermometer
- D. Computer I/O Interface Control
- E. Single Chip Microprocessor Control

(5) PT-100 Temperature Transducer Experiments

- A. PT-100 Resistor-Temperature Characteristics Measurement
- B. Fire Alarm
- C. Digital Thermometer
- D. Computer I/O Interface Control
- E. Single-Chip Microprocessor Control

(6) Humidity Transducer Experiments

- A. Humidity Transducer Characteristics & Converter Circuit
- B. Greenhouse Humidity Control
- C. Digital Thermometer
- D. Computer I/O Interface Control
- E. Single-Chip Microprocessor Control

(7) Load-Cell Weight Measurement Experiments

- A. Load Cell Characteristics & Converter Circuit
- B. Weight Measurement
- C. Digital Scale
- D. Computer I/O Interface Control
- E. Single-Chip Microprocessor Control



- (8) LVDT Transducer Experiments
- A. LVDT Characteristics & Converter Circuit
 - B. Position Measurement
 - C. Distance Measurement
 - D. Computer I/O Interface Control
 - E. Single-Chip Microprocessor Control
- (9) Photovoltaic Transducer Experiments
- A. Photovoltaic Transducer Characteristics & Converter Circuit
 - B. Characteristics of Various Light Sources
 - C. Automatic Lighting
 - D. Digital Luxmeter
 - E. Computer I/O Interface Control
 - F. Single-Chip Microprocessor Control
- (10) Linear Scale Experiments
- A. Characteristics of Linear Scale
 - B. Measurement of Movements
 - C. Computer I/O Interface Control
- (11) Infrared Transducer Experiments
- A. AC/DC Characteristics
 - B. Counter
 - C. Infrared Remote Control
- (12) Ultrasonic Transducer Experiments
- A. Ultrasound Characteristics Measurement
 - B. Motion Detector
- (13) Pressure Sensor Experiments
- A. Zero-Pressure Input Characteristics
 - B. Full-Scale Pressure Measurement
 - C. Over-Pressure Alarm
- (14) V/F, F/V Converter Experiments
- A. VFC/FVC Characteristics
 - B. Computer I/O Interface Control
 - C. Programmable Time Pulse Generation
- (15) Accessories (KL-68011)
- A. Connect Leads: (1) 2mm-0.65mm, 300mmL, 15pcs
(2) 2mm-2mm, 300mmL, 10pcs
 - B. Connect Plugs, ϕ 2mm, 10mmL, 10pcs
 - C. Magnet, 1pc
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- Load Units**
- (1) KL-68001 Humidity & Temperature Load
- ① Temperature Load
- A. Provides heat source for AD590, PT-100, and thermocouples
 - B. Temperature range: ambient – 200°C
 - C. Manual/Automatic adjustment
 - D. Insulated for safety reasons
 - E. Digital temperature control: SSR driven voltage output
 - F. ON/OFF LED indicator
- ② Humidity Load
- A. Humidity Transducer Rated Voltage: Maximum 1V AC
 - B. Frequency range: 500Hz – 1KHz
 - C. Impedance: 1M Ω (75 \pm 5% RH at 25°C)
 - D. Humidity range: 50% – 99% RH
 - E. Output Conversion rate: 100mV/1% RH
- (3) Accessories:
- A. Connect Leads: 2mm-0.65mm, 600mmL, 2pcs
 - B. AC cord \times 1
 - C. AD 590 sensor probe \times 1
 - D. PT100 sensor probe \times 1
 - E. Thermocouple sensor probe \times 1
 - F. Humidity meter \times 1
 - G. Humidity sensor \times 1
- (2) KL-68002 Pressure Gauge
- A. Pressure gauge: full scale 5000mm Ag
 - B. Flow rate control valve
 - C. Power source: 110V AC or 220V AC
 - D. Accessory: plug cable \times 1, 5P-6P, >600mmL
- (3) KL-68003 Load-Cell
- A. Constructed with strain gauge and bridge circuit
 - B. Maximum payload: < 5Kg
 - C. Electronic scale
 - D. Accessory: plug cable \times 1, 5P-6P, >600mmL
- (4) KL-68004 Linear Variable-Differential Transformer (LVDT)
- A. Range: \pm 5mm
 - B. Scale: 0.01mm
 - C. Linear accuracy: 0.1%
 - D. Excitation frequency: 350Hz
 - E. Accessory: plug cable \times 1, 5P-6P, >600mmL
- (5) KL-68005 LUX Load
- A. Selectable light sources
 - B. Light bulb luminous intensity adjustable
 - C. Photovoltaic transducer open voltage: \approx 2V
 - D. Photovoltaic transducer close voltage: \approx 0.08 μ A/lx
 - E. Accessories: (1) AC cord \times 1
(2) Connect leads: 2mm-2mm, 600mmL, 2pcs
- (6) KL-68006 Angle/Distance Load
- Platform moving range: 300mm
 - Adjustable transmitting/receiving angle: 30°/step, 0 – 360°
 - A. Infrared emitter: emission intensity = 100mW/Sr
emission wavelength = 840nm
 - B. Infrared receiver: Max. input wavelength = 940nm
 - C. Ultrasound transmitter/receiver:
nominal frequency = 40 KHz
 - D. Accessory: Connect Leads: 2mm-2mm, 600mmL, 4pcs
- (7) KL-68007 Linear Scale
- A. Resolution: 0.005mm
 - B. Max. range: 200mm
 - C. Stepping motor with speed adjustment
 - D. Voltage requirement: + 5V DC
 - E. Left/Right directional switch
 - F. Left/Right limit switch
 - G. Accessories: (1) Plug cable: 5P-6P, >600mmL, 1pc
(2) Connect leads: 2mm-2mm, 600mmL, 2pcs
- (8) KL-68008 Standard Weight Set
- 2 \times 50g; 2 \times 100g; 1 \times 200g; 1 \times 500g; 2 \times 1Kg; 1 \times 2Kg
- (9) KL-68009 Encoder
- A. DC Power supply: +5VDC
 - B. Output signal: A, B, M
 - C. Response frequency: 30KHz (100 – 600P/R)
 - D. Impedance: 2K Ω
 - E. Current consumption: 60mA
 - F. Rise/Fall time: 1 μ s or less



KL-600

Experiments/Equipments Required

1. Sensor & General Transducer Characteristics Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63001; KL-63002



2. Temperature Transducer Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63003; KL-63004; KL-63005
LOAD UNIT : KL-68001 Humidity & Temperature Load



3. Humidity Transducer Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63006
LOAD UNIT : KL-68001 Humidity & Temperature Load



4. Load-Cell Transducer Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63007
LOAD UNIT : KL-68003 Load-Cell;
KL-68008 Standard Weight Set



5. LVDT Transducer Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63008
LOAD UNIT : KL-68004 LVDT Load



6. Photovoltaic Transducer Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63009
LOAD UNIT : KL-68005 LUX Load





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7. Linear Scale Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63010; KL-63011
LOAD UNIT : KL-68007 Linear Scale



10. Pressure Sensor Experiments Kit

MAIN UNIT : KL-61001
MODULE : KL-63015
LOAD UNIT : KL-68002 Pressure Gauge

